

college AND UNIVERSITY business

JUNE 1957

New Ideas for a Bequest Program

Modern Methods Aid Foreign Language Teaching

The Design and Use of Laboratory Hoods

Give the Editor What He Wants

The Right Time to Retire



MODERN LANGUAGE LABORATORY, PURDUE UNIVERSITY, LAFAYETTE, IND. (page 22)

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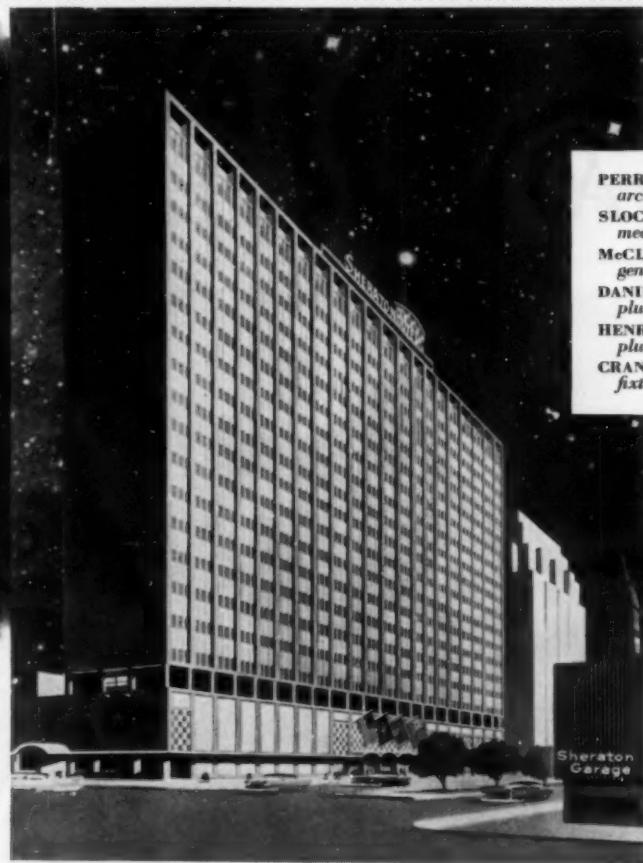
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Paul H. Davis

PAUL H. DAVIS, consultant in institutional finance and public relations, on page 19 raises the controversial question as to when administrative personnel should retire. Formerly vice president in charge of development at Columbia University, Mr. Davis has served as general secretary of Stanford University and as manager of the San Francisco Community Chest. His wide experience with university organizations and

civic groups makes his comments on an appropriate age for retirement of particular interest. . . . It has been the conviction of ARTHUR C. FRANTZREB, director of university development at Rutgers University, that too often institutions have attempted to establish programs relative to encouraging bequests without enough preliminary work being done to make certain that the proposals will be received favorably. On page 21 Mr. Frantzreb discusses in detail the procedures established at his institution that have proved to be effective and profitable.



Elton Hocking

ELTON HOCKING, head of the department of modern languages at Purdue University, Lafayette, Ind., describes on page 22 the modern language laboratory in operation at Purdue, the first of its kind. Dr. Hocking has been professor and head of modern languages at Purdue since 1947; prior to that time he was an associate professor at Northwestern University. Dr. Hocking is author or co-author of three books and has written extensively for educational and audio-visual magazines on the modern language laboratory setup at Purdue. He has had two opportunities to travel and study in Europe, the first in 1930 on a University of Wisconsin fellowship, and five years ago on a Fulbright fellowship. When he has the time, he exercises his green thumb in the garden and, for a more intellectual pursuit, plays contract bridge.



Vivian E. Minger

VIVIAN ELOISE MINGER, supervisor of the stenographic pool at Fisk University, Nashville, Tenn., points out on page 26 pertinent considerations in regard to establishing a stenographic pool to assist faculty and administrative personnel in clerical duties and official correspondence. She has been in her present position only since 1956. Before that she had been secretary to the director of the student center at South Carolina State College, Orangeburg, S. C., a teacher in the public school system of Savannah, Ga., and secretary to the dean of the law school at South Carolina State College. In all the professional positions she has held, she was on the original staff, helping to organize the office or institution. From such broad experience she has developed the conclusions she draws regarding operation of a stenographic pool. . . . A. E. MARIEN, accountant in the internal auditing division of the business office of the University of Illinois, presents on page 40 the second installment of his series of articles on "Auditors Aid Administration."



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QUESTIONS AND ANSWERS

Student Participation

Question: What are the theoretical limits to student participation in administrative plans and policies of a college or university?
—J.S., Mass.

ANSWER: The limits to student participation in administrative plans and policies of a college or university are not so much theoretical as practical. Determinants in the case of a particular institution are likely to involve such considerations as the kind of students who attend it and the traditions of the individual college or university community. Colleges and universities in the United States vary with respect to student participation in administrative planning and policy making all the way from those in which the only manner in which a student has influence is through his choice to attend or not to attend to those in which students are included in the membership of virtually every committee that has anything to do with formulating plans and policies for the institution.

There is today a rather general acceptance of the idea that students should be given a strong voice in decisions that affect their own living outside the classroom. In such matters as conduct in residence halls, scheduling of social affairs, and operation of the student union, the students quite commonly have full participation in planning and policy formation.

Much less common is the inclusion of students on committees having to do with problems of instruction and curriculum. It is even rarer to find students participating in planning and policy making in the field of finance, though sometimes those phases of finance that directly affect the student, such as a change in fees charged, may be referred to a student group for an expression of attitude or opinion. Plant development is another area in which students are rarely consulted, except in the case of student unions or other facilities in the operation of which students participate.

One of the limits to the participation of students in administrative plan-

ning and policy making is the time that can be given to such activities. Normally students are so busy with their academic programs and their extracurricular activities that they cannot well afford to spend the time necessary to participate effectively in institutional planning and policy making. It may be noted, in passing, that much the same consideration applies to faculty members; for that reason, if for no other, planning and policy making are likely to fall chiefly to the lot of administrative officers, for they are the only people around the institution who can find time for such activities.

Another limitation on the participation of students in administrative planning and policy formation is the rapid turnover in student personnel. A graduate student, however, who has been around the institution a number of years, generally develops a point of view about institutional problems that is somewhat different from that of the typical undergraduate. Worst of all, in representing the typical student point of view, is the student who stays on and on, virtually making a career out of being a student, oftentimes with the help of a part-time job, who tends to gravitate to a position of student leadership through seniority.

It is sometimes said that students tend to be timid in expressing opinions

when placed in a group with faculty and administrative officers for planning and policy formation. My own observation is that this is seldom the case. Most students have few if any inhibitions in expressing their opinions on matters in which they are vitally concerned.

Effective participation in planning and policy formation must be based on a thorough knowledge of the situation under discussion. It is sometimes said that students, being much less mature and experienced than faculty members and administrative officers, can have little to offer by way of valid points of view on proposed plans and policies. Such an argument is to a considerable extent offset by the necessity in all planning and policy making to consider varying points of view. Sometimes the lack of experience actually may be an advantage in enabling a less mature person to present ideas that are fresh and original and that represent the starting point of real progress.

In general, the theoretical limitations to student participation in institutional planning and policy making lie in two dimensions: time and competence. Does the student have time to give thorough study to the activities of the planning and policy forming group to which he or she may be assigned? Does the student have any basic competence for expressing a valid point of view on the issues under discussion? In all cases in which an affirmative answer may be given to these questions it would seem desirable to include students in any group in a college or university having responsibility for planning and policy formation.

Observation over a period of years leads me to the conclusion that the general tendency is toward the assignment of an increasing share of responsibility to students and student groups in planning and policy making activities.—JOHN DALE RUSSELL, *chancellor and executive secretary, Board of Educational Finance, State of New Mexico.*

If you have a question on business or departmental administration that you would like to have answered, send your query to COLLEGE and UNIVERSITY BUSINESS, 919 North Michigan Avenue, Chicago 11, Ill. Questions will be forwarded to leaders in appropriate college and university fields for authoritative replies. Answers will be published in forthcoming issues. No answers will be handled through correspondence.



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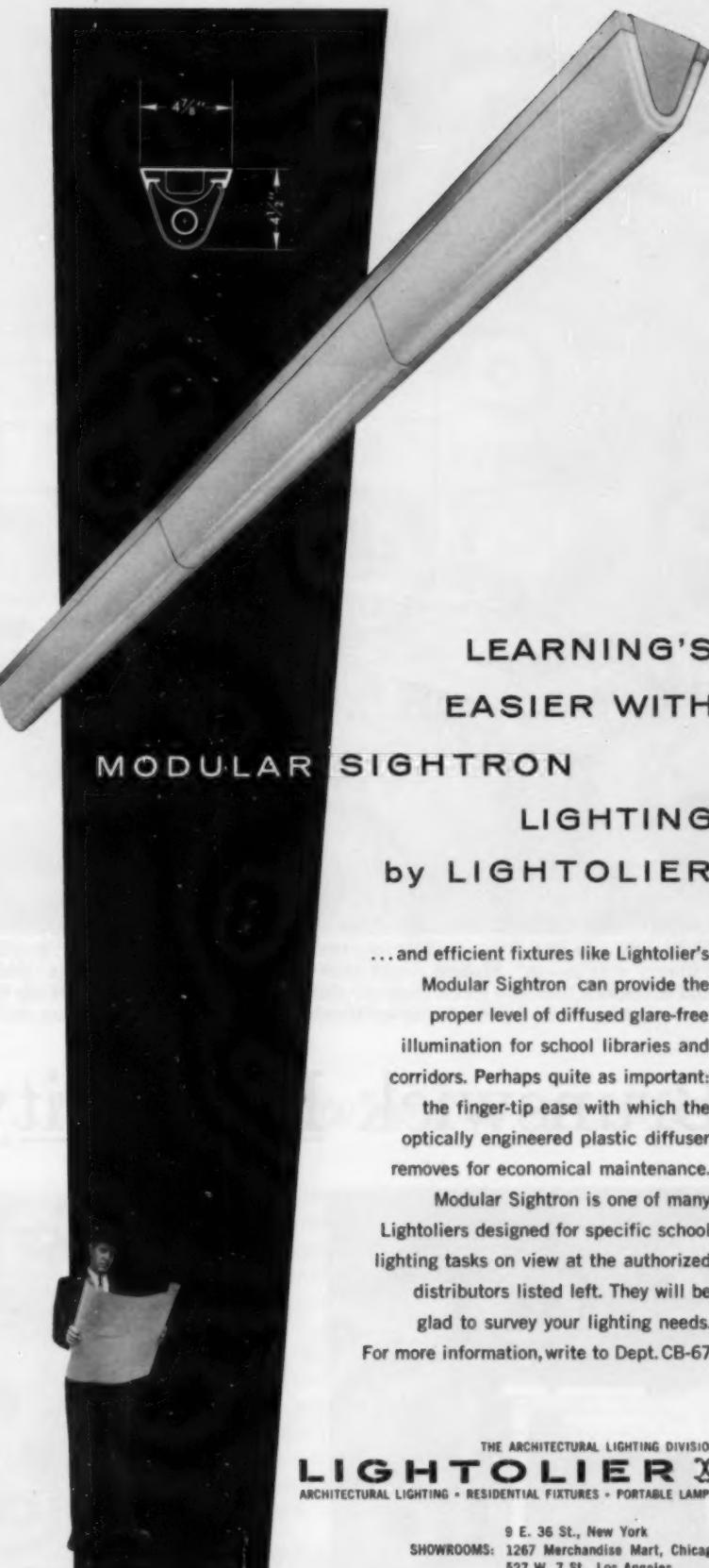
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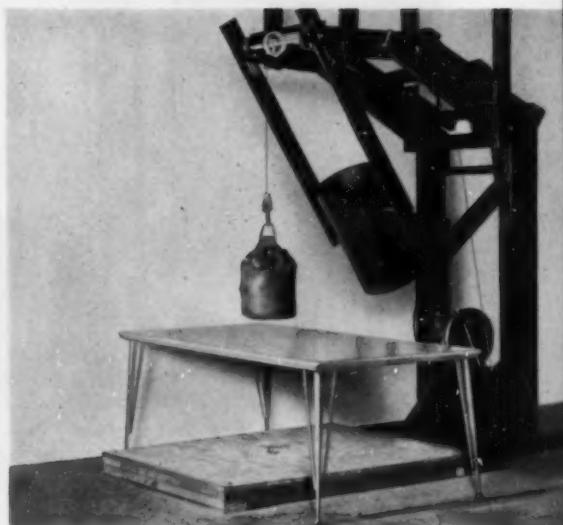
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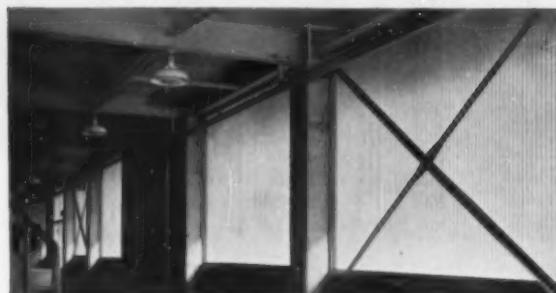
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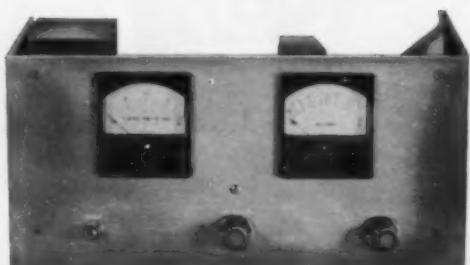
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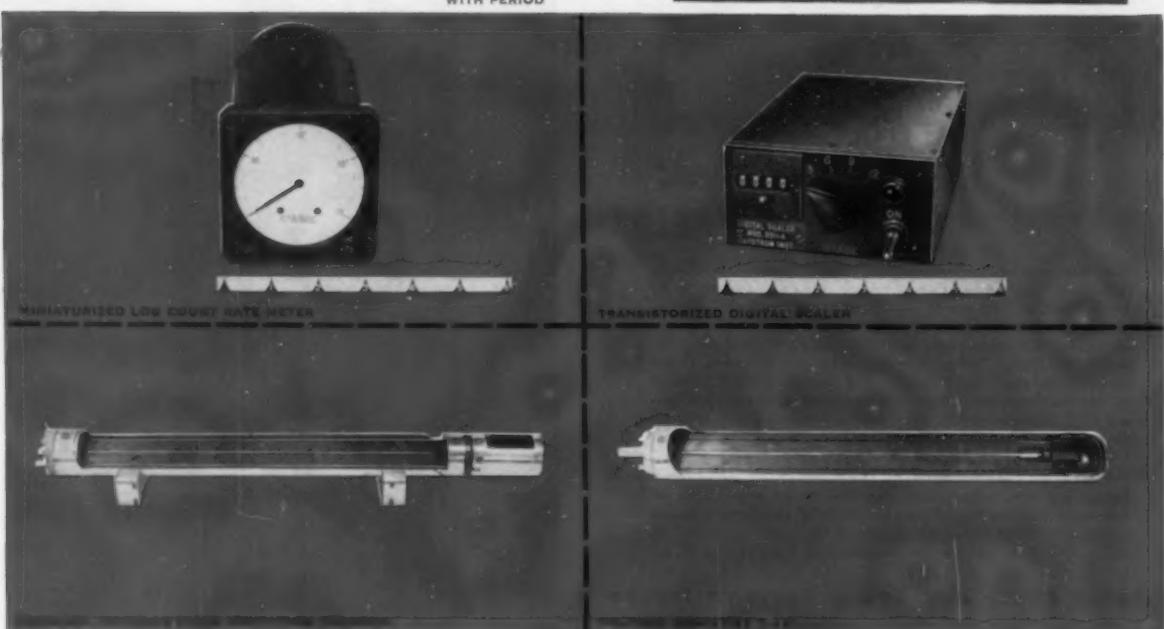
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The Plus in Developing Faculty Morale

I. D. WEEKS

President, University of South Dakota, Vermillion



QUALIFIED PERSONS SHOULD BE ENCOURAGED TO enter college teaching and members of the profession should be encouraged to remain in it. To accomplish this, college administrators will have to go beyond the usual procedure and think in terms of what can be done to make faculty members happy in their work. An able, happy and enthusiastic teacher can do a great deal by indirection to interest college students in teaching as a profession.

Some essentials must be present if we are to recruit and retain competent teachers in the institutions of higher learning. Among these are reasonable salaries. Salaries of college teachers are deplorably low when compared with people with similar training engaged in other professions.

Almost as important as salaries are the conditions under which one teaches. Adequate office space, equipment, teaching materials, and library facilities are a necessity for the teacher. Faculty members should be encouraged to attend meetings of their learned and professional societies, and the institution should defray the traveling expenses. A small budget to provide clerical assistance will be of real help in building faculty morale.

University teachers should engage in research, but to do this they must have the time and a minimum of facilities. Teaching loads need to be reasonable. Probably as important as anything is the atmosphere in which one is to teach; that is, there must be freedom to teach and to do research unfettered by regimentation and restriction.

The last essential is that of democratic administration, based on the premise that the relation of a college teacher to the dean and president is different than those relations existing between an executive and an employee in industry. Rather, it is more a partnership. Faculty members should have complete authority in some areas, such as determining curriculums and administering graduate requirements. On the other hand, democratic administration requires that the faculty have a voice in determining many other educational policies.

The foregoing are necessary if we are to attract able young people into college teaching, but they are not enough. There is an area which goes beyond these commonly accepted conditions and practices

and which costs little except added energy and the right kind of attitude on the part of college administrators. This area is being called the "plus," the "extra," the "second mile" in administration. It has to do with providing a wholesome personal relationship between teachers and administrators.

One of these plus factors is praise. Properly given, praise is a powerful motivating force. Deans and the college president have innumerable opportunities to speak or write a note of commendation to a faculty member who has done a good job on some extra assignment or whose teaching always remains on a high level. Every member of the faculty does something from time to time that merits praise. Praise costs little but dividends that accrue from it are of real consequence in creating strong faculty morale.

College presidents can do a great deal to create a wholesome atmosphere through friendly personal relations with members of the staff. An informal chat in the corridor or over a cup of coffee makes for better understanding.

The president's office should always be open to members of the staff, where they can bring their problems and criticisms. It is important that lines of communication be kept open. In large universities it is impossible for the president to take a personal interest in every staff member. However, if he has the right philosophy those administrative officials closely associated with him will develop a like attitude and gradually it will become part of the atmosphere of the campus. Letting the faculty "in on plans" makes for a good feeling. Keeping the staff informed about such things as budget and legislative matters, rather than having the information acquired first from the newspapers, is a plus factor that creates a wholesome atmosphere.

Regulations, legal restrictions, size and organization of institutions may tend to make administrative practices appear to be cold, mechanical and impersonal. Some of these may be mechanical in spite of the philosophy of the officials, president and other principal administrators, but it is my contention that much can be accomplished to make college teaching more attractive if a friendly atmosphere prevails on the campus. The president is a tremendous influence toward creating such an atmosphere if he so wishes.

LOOKING FORWARD

Professional Growth

SUMMER SEEMS TO BE OPEN SEASON FOR ADMINISTRATIVE workshops in higher education. These workshops offer such opportunities for professional growth that top-level administrators should encourage their staff associates to attend and enhance their professional competence.

This summer, workshops on college business management will be conducted at the University of Omaha and the University of Kentucky; a fund raising workshop, at Chautauqua, N. Y., under the auspices of Pennsylvania State University; a workshop on higher education administration, at the University of Michigan; a workshop on bookstore operations, at Oberlin, under the auspices of the National Association of College Stores, and a workshop at Scarritt College in Nashville, under the sponsorship of the board of higher education of the Methodist Church. During the past year workshops have been sponsored by the National Association of Educational Buyers, the Eastern Association of College and University Business Officers, and the Western Association of College and University Business Officers.

Shortsighted indeed is the executive who does not encourage his staff to participate in one of these efforts to improve competence. Attendance at professional workshops will pay dividends far in excess of the modest monies involved for tuition and other expenses.

Penny-Wise, Pound-Foolish

HIGHER EDUCATION FACES A DISMAL FUTURE UNLESS it quickly revises its general policy on salaries for faculty and staff. The competition from industry and business threatens to siphon off the best professional and executive talent.

Dedicated personnel is needed for teaching and administrative duties. However, there is no reason these persons should be exploited by attempts to retain them at inadequate salaries. In many instances, institutional administrators plead poverty while setting salary schedules, but somehow find funds for brick and mortar to construct new buildings. Such inconsistency has a damaging effect on faculty and staff morale. It is to the everlasting credit of the Ford Foundation that in its multimillion dollar grant to higher education more than a year ago it chose to allocate its funds to higher education for the purpose of increasing faculty salaries.

If nothing else, the gifts from the Ford Foundation dramatized the importance of improving the salary schedule so that colleges and universities might retain some semblance of quality in their academic offerings.

The administrative staff needs salary attention also. Business managers, purchasing agents, food service directors, union directors, physical plant administrators, all need improved salaries.

Food service and union directors, who operate substantial portions of the income producing facilities of higher education, are inadequately compensated when one considers the volume of income from the enterprises for which they are responsible. Is it any wonder that trained food service directors, already in short supply, leave the campus to accept business and industrial opportunities where their talents are more adequately recognized?

If a penny-wise, pound-foolish attitude on salaries continues to exist in higher education, it will not be long before college executives find thousands of students on their institutional doorsteps but with nobody to teach, house and feed them. A faculty and staff shortage can be much more critical than a shortage of campus buildings.

Quality

CANDIDATES FOR ADMISSION TO COLLEGES ARE FINDING it ever more difficult to qualify. Admission officers, taking advantage of a buyers' market resulting from heavy enrollment pressure, select the cream of the high school crop. After his acceptance, the new student finds standards of scholastic achievement that were not in effect when his parents were enrolled. It is difficult to get into college, to stay in college, and to get out via graduation because of these higher hurdles of scholastic performance.

While all this is going on, what is higher education doing to improve academic content? If a college education is set at a high premium because of high entrance and graduation requirements, isn't a student entitled to improved faculty performance in the same measure?

A college administration is not justified in requiring a student body of high quality without exhibiting a comparable concern for improving the quality of its academic bill of fare. Is this taking place in higher education?

It may be sooner than you think

Is it true that a college
makes most of its progress
during the years its
president is under 60?

The Right Time to Retire

PAUL H. DAVIS

Consultant in Institutional Finance & Public Relations
Los Angeles

THE STORY MAY BE APOCRYPHAL OF the trustees at Columbia University during the period when Dwight D. Eisenhower was its president. At the board meeting, President Eisenhower suggested that there should be a retirement plan for the trustees. (He installed a retirement plan for himself by formally filing his resignation dated for his 65th birthday.)

One trustee suggested that they become honorary on reaching 65, as was the rule for administrators (except for the president). Another trustee suggested the age of 70, saying, "Our administrators retire at 65, our teachers at 70; I suggest that trustees, like the teachers, retire at 70." Another said, "Our administrators retire at 65, our teachers at 70; I suggest that our retirement age be 75." An active, aggressive octogenarian trustee commented, "I support the latter plan to retire at 75 rather than at 70 or 65. After all, we don't want this university run by a bunch of kids."

George Washington at 43 was elected to command all the Continental armies; John Rutledge was architect of our Constitution at 37; Alexander Hamilton was first U.S. Secretary of the Treasury at 32; William Pitt was prime minister of England at 24; Alexander the Great ruled at 20.

The fixing of the age for retirement of college and university presidents and other administrative officers is a knotty problem. Stanford University has fixed the age at 65 years. Columbia University leaves to the trustees the decision on its president's retirement age. Macalester College suggests retirement



William F. Russell (left) resigned as president of Teachers College, Columbia University, at the age of 64, somewhat as his father had done 27 years earlier. The elder Russell, James E., was also head of Teachers College. After 30 years at that job, one afternoon after a hard day's work he realized that he had vetoed every suggestion brought to him by his young administrators that day. Then and there he wrote his resignation, put it in the mail, went home, and never returned to his desk.



James B. Conant (right) willingly retired as president of Harvard University at the age of 60. Not so ready to step down, even when the official retirement age was reached, have been many college administrators, even those who fought longest for rigid retirement rules. Among these was Ray Lyman Wilbur of Stanford. Nicholas Murray Butler of Columbia didn't retire until he was 83 years old and almost blind.

at 65 but permits continuance until 70, on a year-to-year reappointment basis; Earlham College does likewise.

At Columbia, President Nicholas Murray Butler successfully avoided all suggested successors and remained president until he was 83 years old and until he was almost totally blind. At Stanford, President Ray Lyman Wilbur had installed a rigid retirement at 65 rule in almost every organization to which he belonged, including the Rockefeller Foundation, yet when he became 65 he clung to the presidential chair with a vigor and tenacity that belied his years, and secretly he was unhappy when the trustees retired him at 67.

One young president told me that he plans to retire early. "I intend to retire at 60," he said, "for I know that if I wait until 65, then I will be so fearsome of being put on the shelf that I won't retire until 70, and then I would surely clutch hard until *rigor mortis*."

In my work as consultant, I see top managements of many institutions. For one of my clients, the *Reader's Digest*, I visit some 40 colleges and universities a year, and yet I know of only three presidents who have willingly retired at or before reaching 65 years of age.

65 RULE DEBATABLE

Although 65 is regarded by many as the ideal inflexible rule for retirement, the wisdom of that rule is debatable, for the pages of history reveal numbers of men who have rendered illustrious administrative service long after 65. Winston Churchill in political administration and the late Thomas J. Watson in industrial management are recent examples. Much depends on the man, the task, and the organization. If the organization is highly centralized with a one-man control of administration as is the case at so many colleges, and even at a few universities, then the position surely requires a young man. Maybe for them 60 would be a better retirement age than 65, for I note that in such colleges most of the progress is made while the president is under 60.

If, on the other hand, the organization is widely decentralized, the demands on the president are quite different. Then he does not have to be the dynamic iron man who is leading at all fronts; he can observe from headquarters and from there pass on his years of experience and sagacity to

his young lieutenants. L. W. Houston, president of Rensselaer Polytechnic Institute, where the institute is decentralized into four academic administrative groups, each with a young, vigorous chairman, has presided over Rensselaer's period of great ascendancy while more than 60 years of age. It is clearly possible when the administrative organization is decentralized that the president be an older man of long experience and wisdom—but this only if young men, with the eager aggressiveness of youth, are leading the various divisions.

In many cases the reverse is found. The older president selects, or at least retains, men in his top administration



staff who are as old or older than he. That curbs progress and discouragingly dampens the fresh enthusiasm of the young men. Here education might well take a leaf from the rules of the military, where if a lieutenant, captain or a major doesn't win promotion within a reasonable age limit, he is retired. There are no 65 year old captains in the army. Maybe the same should be applied to department and division heads of faculties, except there the men should not be retired but returned to teaching.

At some colleges the president is a member of the board of trustees. That frequently causes trouble. It makes him doubly hard to retire and, with specific institutions in mind, I add that it makes life hard for his successor; generally friction results.

The three presidents who willingly retired before 65 are James B. Conant of Harvard and the two Russells of Columbia Teachers College. James E. Russell's retirement was dramatic. He had been head for 30 years and was 63 years of age. At the close of one long working day, President Russell realized that he had vetoed every suggestion that had been brought to him that day by his young administrators, whereupon he concluded: "I must be getting old. It's time to retire." Then and there he wrote his resignation, posted it, went home and never returned to his desk. His son, President

William F. Russell, did likewise some 27 years later.

Of course, this retirement problem of presidents involves only a small percentage of the presidents, as more than half of America's college and university presidents do not survive in office for even five years. The percentage who reach retirement age must be low, yet the number of great presidents who stay in office too long and who wait for the trustees or bad health to force them out of office is both notable and serious.

Nevertheless, it would seem that there is no single retirement age plan that will fit all institutions, but there may be a few guideposts that may be considered by the trustees and others of responsibility.

If the college or university's organization is highly centralized, then the president's retirement age might best be rigidly set at 60. (The trustees and the president of such institutions might well read Ralph J. Cordiner's book on administration, which discloses in detail the modern decentralized organization methods of the General Electric Company.*)

PRESIDENTS' RETIREMENT AGE, 65

If there is an active board of trustees and if the administrative organization is widely decentralized, then the proper retirement age for the president would seem to be 65, with the provision that he may be reappointed by the board on an annual basis until he reaches the age of 70. In this case, the president should insist that his four top men in charge of the main divisions (academic, business, student affairs, and development) each be under 60 years of age (preferably under 50 years of age). The same age prescription should apply for the academic division heads, and the academic department heads should all be under 50 years. If, for any reason whatsoever, such age limits cannot be observed, then the president should retire at no later than 65 years of age.

It appears that American colleges and universities for the years ahead, which are filled with new problems, responsibilities and opportunities, may well give more attention to building into their administrations an increased portion of youth's venturesome boldness to blend with age's weighty wisdom.

*Cordiner, Ralph J.: *New Frontiers for Professional Managers*, McGraw-Hill Book Company, Inc., New York, 1956.

IN OUR ANALYSES AND SURVEYS OF bequest programs of colleges and universities, we have been particularly cognizant of the large sums of money expended in behalf of committee organizations, dinners, annual meetings, regional meetings, and elaborate publicity. Most of these programs are temporary because there is no organized follow-up procedure. We decided it was possible to create a bequest program that would be within budget limitations, easy to administer, easy to follow up, and yet effective.

Spreading the base of future support through bequests is essentially a problem of communications. Many colleges have embarked upon bequest programs with a single major brochure as their bequest literature only to find that the probable response is not sufficient in itself for committees or staff. Bequest committee memberships are difficult to maintain long enough to be effective. The enthusiasm of staff work is frustrated by changing personnel, and other pitfalls are encountered that tend to adulterate the effectiveness of a continuing bequest communications procedure.

In planning for a bequest program at Rutgers University, which became the State University of New Jersey on Sept. 1, 1956, we sought to design a unique program for Rutgers' unique traditions and future. First of all, we could not afford or justify the expense of elaborate publications. Second, we did not wish to organize extensive committees throughout the United States, which are costly to maintain and which, if prolonged, cause a familiar fund raising disease—campaign fatigue. In other words, we did not wish to wear out good potential leadership. Nor did we wish to set up the university as an authority or clearinghouse for complicated legal, accounting and income tax information. Finally, we wanted to put the Rutgers' story before those who are in a position to use the information in advising individuals, organizations, corporations and foundations as to the disposition of their assets or philanthropic programs.

The Rutgers' bequest program consists of: (1) a small advisory committee of individuals from financial counseling professions; (2) a series of pamphlets, each of which contains one theme and which is equally applicable for use by financial counselors, corporate executives, or private individuals; (3) a file folder in which

New Ideas for a Bequest Program

ARTHUR C. FRANTZREB

Director of University Development
Rutgers, State University of New Jersey, New Brunswick

bequest information publications can be retained.

The bequest committee consists of: (1) a prominent alumnus who is a member of the university board of trustees and an attorney with a leading New York legal firm; (2) the vice president and trust officer of the largest bank in New Jersey, also a member of the university board of trustees; (3) a member of one of New Jersey's leading accounting firms; (4) an alumnus who is a partner of a leading New York securities firm; (5) an alumnus who is a partner of a leading Jersey attorney, a member of the university board of governors and university board of trustees, and (6) an alumnus who is a partner of a New York private banking and securities brokerage firm and who represents the Rutgers College Alumni Association.

The chief publication of the bequest program is a series of pamphlets, entitled "Ideas on Thoughtful Philanthropy." Each pamphlet is planned to be at least four pages. The front page contains the same masthead. The back page contains similar information concerning the philanthropic information service and suggested techniques of bequest planning and giving. The remainder is devoted to special material; each of these sections has a different layout. The format is so designed that future copies will be pre-stamped with the words "your file copy" to encourage recipients to place pamphlets in the permanent file folders.

The first pamphlet tells what bequests mean to Rutgers. The second is a brief financial statement of the

university's sources of income and Rutgers' financial position among universities of similar nature.

Succeeding pamphlets, distributed at three-month intervals, will emphasize bequests for research, for fellowships, and for specific buildings.

To encourage financial counselors and their secretaries to retain the pamphlet, a special file folder has been printed containing basic information considered somewhat permanent in nature. This information can be used by the counselors in discussing the nature of Rutgers with their clients.

File folders distributed with the first two copies of the "Ideas" series went to nearly 25,000 individuals: alumni of the school of law; lawyers, not alumni who are members of the New Jersey State Bar; attorneys in the metropolitan New York and Philadelphia areas; all alumni of our graduate school of banking (this includes bank officers and junior executives of nearly every bank in the United States); members of the New Jersey Society of Certified Public Accountants; principal certified life insurance underwriters in New Jersey, and alumni of the men's colleges up to 1930.

Individual pamphlets are sent to prominent citizens, corporation presidents, corporation officers and directors, foundation executives, and organization officers.

Here, then, is a bequest program designed to communicate with those who are in a position to advise others about philanthropic opportunities at Rutgers. Further, the technic of communication is low cost without sacrifice of quality. #

**A new dimension in
foreign language learning**

The Language Laboratory

ELTON HOCKING

*Head, Department of Modern Languages
Purdue University, Lafayette, Ind.*

THE LANGUAGE LABORATORY FOR BEGINNING classes is at once the most recent and the most promising development in the field. Thanks to the magnetic tape recorder, whose development it has paralleled, it can do for the spoken language what printing has done for the written language. The possibilities, both educational and financial, are very great.

Educationally, the language laboratory enables all students to speak or

"recite" at the same time, just as the book enables them all to read at once. This is in striking contrast to the traditional classroom procedure in which perhaps 25 students recite in turn during the 50 minute period. Assuming that the instructor speaks only half of the time (a charitable assumption!), each student practices his foreign language one minute per class meeting.

In the language laboratory, however, all students are practicing at once, all

through the period. And it is not mere "chorus work." Isolated in his semi-soundproof booth, the student hears the prerecorded lesson through his earphones (which also shut out extraneous sounds); in the carefully spaced pauses he speaks into his microphone, imitating, answering questions, responding to various directions. The recorded voice next tells him what he should have said, and then goes on to the next item of drill. After a time, the student is directed to rewind his own tape and replay all that he has said and heard. Already, while speaking, he has—through his earphones—heard himself as others hear him (a chastening new experience made possible by electronics); now his tape recording brings back his own voice in contrasting alternation with "his master's voice."

This is truly a new dimension in foreign language learning, a Copernican step forward in *quality*. Combined with the 25 to 1 ratio of increase in *quantity* of oral practice, the improvement is spectacular. And it can be had for less instructional cost than the traditional teaching.

Before turning to the subject of costs, let us note that the wartime teaching of foreign languages in the armed services created a strong public demand for the ability to *converse* in French, Spanish or other modern language. In contrast, college courses were usually a matter of "silent brooding over the printed page." It was hardly fair to ask the colleges to use the "army method," to limit classes to 10 students, to have them meet 15 hours per week. (The Army Language School at the Presidio of Monterey, Calif., still maintains a student-faculty ratio of 2 to 1 or 3 to 1.) Thanks to small enrollments, some colleges were able to try it. However, the approach-

(Text Continued on Page 24)





Instructor at console in Purdue University's language laboratory monitors individual students. Switches permit two-way communication with any student. The sliding front panels are normally in a raised position.

COST AND MAINTENANCE OF LANGUAGE LABORATORIES AT PURDUE UNIVERSITY

PURCHASE AND INSTALLATION		MAINTENANCE (WITHOUT OVERHEAD)	
A. Lab room 112 (28 booths and "master")		1. Amortisation over ten years	
Equipment (including booths)	\$13,487.48	Net cost	\$27,984.07
Installation	596.88	Annual occupancy 1954-1956	
Furniture	274.80	(76% of theoretical maximum) 58,880 student hours	
Freight	200.00	Projected ten-year occupancy 588,800	"
Miscellaneous (flooring, acoustical tile, etc.)	1,442.41	Projected ten-year cost per student hour	.0492
Total	\$16,001.57		
B. Lab room 111 (27 booths and "master")		2. Parts and equipment	
Equipment (including booths)	\$11,434.35	1951-1954 (one lab only)	\$ 4,604.53
Installation	514.00	Total use 78,320 student hours	
Furniture	261.80	Cost per student hour	.0588
Miscellaneous (flooring, acoustical tile, etc.)	1,442.41	1954-1956 (two labs)	3,318.73
Total	13,672.56	Total use 117,760 student hours	
		Cost per student hour	.0282
C. Repair shop and recording room		1951-1956	
Construction	\$ 922.46	Weighted average cost per student hour	.0404
Equipment	846.10		
Spare parts	335.66		
Furniture	13.00		
Total	2,117.22		
Grand Total	31,791.35		
Less: Non-recurring, general improvements (flooring, acoustical tiling, construction of repair shop)	3,807.26		
Net cost	27,984.07		
		3. Labor	
		1951-1954 (one lab only)	\$ 2,875.32
		Total use 78,320 student hours	
		Cost per student hour	.0367
		1954-1956 (two labs)	4,428.10
		Total use 117,760 student hours	
		Cost per student hour	.0376
		1951-1956	
		Weighted average cost per student hour	.0372
		Total average cost per student hour	.1268

ing hordes of students will soon put an end to all that, and foreign language instruction will be caught in the middle, between the continuing demand for conversational language and the absolute necessity of making classes much larger than ever.

Providentially, we shall be able to do both of these things. Our *deux ex machina* is an electronic *machina*, the tape recorder. We can combine it with a few more machines such as film and filmstrip projectors and thus multiply the good teacher by means of the language laboratory. In the same process we can increase (if not multiply) his salary and do a better job for our students—all at no increase in cost per student.

COST AND MAINTENANCE

What fee to charge? Purdue makes no charge but it appears that \$5 per semester would be a fair fee for students using the laboratory twice a week, as ours do (32 by \$0.1268 = \$4.06). The amount charged will depend partly on an institution's overhead factor, but a common language laboratory fee is \$5.

Instructional cost. Our tabulation does not include instructional salaries, for our laboratory sessions have replaced regular classroom meetings, with the instructor simply meeting his class in another room—the laboratory—twice a week. In this respect our language laboratory is not comparable with a science laboratory, and the instructional costs of the two should not be compared. However, the normal instructional cost of the language laboratory—and therefore of all first-year language instruction held there—probably can be halved at least, by constructing jumbo sized laboratories accommodating 50 or more students. Apparently one instructor can monitor (correct and/or grade) a student in about one minute, on the average. Aided by a student assistant, perhaps a teacher-candidate, to do all chores, the instructor could thus monitor in one hour the number of students to whom he now devotes two hours.

The equipment we lack. In our climate, at least, air conditioning is a must. To exclude extraneous sounds, all doors and windows must be kept closed. Heat is generated by 20-odd motors with their amplifiers and electronic tubes and by 20-odd human radiators, and on the warm days of spring and fall the excessive heat, humidity and foul air are almost

nauseating. The sliding panels of the booths warp, stick and splinter; magnetic tapes deteriorate and must be replaced (and likewise the work of recording them); motors overheat, and fine adjustments go wrong. It is unreasonable and uneconomical to use the laboratories in spring and fall, and quite impossible to use them in summer. We are going to have air conditioning next fall and thus maximize the use of our equipment and the efforts of students and staff.

Another must is a soundproof recording room. Our faculty members make hundreds of recordings every year. Frequently a recording job is ruined by noises from outside or inside the building; it must be started over, perhaps only to be ruined again and again. This waste of valuable time is frustrating and inefficient. We hope soon to purchase a ready-made soundproof room (3 by 5 by 7 feet) for about \$1600. This in turn will free the repair shop for the exclusive use of the technicians, who need to use it uninterruptedly. The recording room, surely, and the repair shop, almost surely, also should be air conditioned.

Amortization. The 10 year period is only an educated guess; perhaps it should be longer or shorter, depending upon the cost a few years hence of maintenance as opposed to replacements. For example, our present recorders, now in their sixth year of 8 hours a day operation, are apparently indestructible, but the maintenance cost is high. Also, their quality of sound reproduction is inferior to later models.

On the other hand, installation costs and various articles of furniture (such as student booths at \$65 each) have a longer expectancy than 10 years. On the whole, we have figured amortization conservatively.

Parts and equipment. The relatively high cost for the early years was caused by original outlay for parts, tools and testing equipment; by misfortunes with a brand new model, and by student technicians who waited for equipment to break down before servicing it.

Labor. Despite such occasional troubles, we are in favor of student technicians because they are more quickly and frequently on the job and they develop a personal interest in it. Also, their services are somewhat cheaper. Our half-time chief technician is a mature student, formerly a naval electronics technician, first class. He directs the routine work of the others, all part-

time student workers, and devotes much of his own time to testing and improving the equipment. He has made important savings by purchasing and assembling components (for example, the console pictured on page 23). He has upgraded the quality of our equipment and tested manufacturers' samples for the Purdue purchasing office.

Systematic preventive maintenance is essential, not only to save costly repairs but also to avoid breakdowns which demoralize the class. Standard tape recorders are not built for the heavy use of our laboratories, and the cheapest ones are out of the question. Even those in the \$250 range are sure to fail occasionally, so 10 per cent of the booths are kept vacant, as standbys. (Repairs are made daily but not hourly.) Although prevention is the best cure, one eight-hour day involving eight students can do things to an instrument intended for occasional use in an office.

The multichannel recorder may provide the solution of these problems. A recent development for industrial use, it probably can be adapted to our purposes. Three 15 channel instruments at the front of the room could replace 45 instruments in student booths; two 30 channel instruments could service 60 booths and enable students to do all that they now do. The purchase price probably would be double what we now pay, but maintenance probably would be reduced to a small fraction. Perhaps a lend-lease or rental plan could be devised for the prototypes.

Use of "visuals." Sliding front panels in the student booths are primarily to enable the students to see the projection screen. Oral language becomes real when we can see what we are talking about, in the laboratory as in life situations. Therefore, we use our own sound films (page 25), slides, sometimes filmstrips. We have experimented with the opaque projector and even the controlled-speed projection of text readings. Like other experimentally minded departments, we have abandoned the deaf-and-dumb method of language teaching in favor of seeing and hearing and communicating. Audio-visual brings the foreign language and people and country into the classroom—or rather, the laboratory.

CONCLUSION

Two years ago Dr. Robert E. Taylor of the Modern Language Association compiled and tabulated the returns on

his exhaustive audio-visual questionnaire circulated to the colleges. One hundred and one colleges reported that they had a language laboratory, costing anywhere up to \$40,000; 98 laboratories dated from 1950 or later. Overwhelmingly they use tape recorders, make their own recordings, and transmit them by earphones, but only a small number provide a recorder in every booth as we do. In short, most "language laboratories" are listening rooms.

REGULAR CLASS NOT REPLACED

As in the sciences, students are required to attend one or two hours a week under the supervision of an assistant. They get practice in hearing and in repeating during the pauses, and that is all. There is therefore no question of the laboratory replacing any of the regular meetings of the class.

In the three academic years since Dr. Taylor mailed out his questionnaire, there doubtless have been established more laboratories of the Purdue type—complete laboratories integrated with and replacing some of the regular class meetings. The pedagogical success of such laboratories, together with the increasing shortage of teachers, doubtless will impel administrators to build more language laboratories. Open-minded and progressive language teachers will welcome them for providing a lively and rewarding new activity. Business officers will justify them as a sound investment. Even the small college can well afford a good language laboratory if it is shared, as in many colleges, by the departments of English, speech and music. But large or small, any college will do well to retain the services of an independent consultant before spending the considerable sums involved.

It is a pleasure to acknowledge the confidence, generosity and friendly interest of my superior officers at Purdue; the information supplied by Professor Léon Dostert, director of the Institute of Languages and Linguistics at Georgetown University; the help of my co-workers, Prof. J. Collins Orr, director of Purdue's laboratories, Prof. Earle S. Randall, director of the annual summer A-V workshop for teachers, and Robert C. Merchant, chief technician; the enthusiastic good work, finally, of all my departmental colleagues, without whose loyalty our fine laboratories would only be—equipment.

#



Director of summer workshop and two students, who are language teachers.



Above: Modern language students record all they say and hear, and later replay it for self-criticism. Below: In darkened classroom, students see as they hear as they speak. Sound track of film is heard through earphones.



The Well Organized Stenographic Pool

VIVIAN E. MINGER

Supervisor, Stenographic Department
Fisk University, Nashville, Tenn.

SMALL COLLEGES AND UNIVERSITIES have great need for a central stenographic and transcribing pool to serve those departments that have small groups of uncontrolled stenographers who work part of the time on letters, part of the time on miscellaneous work, and part of the time on periodic work. The stenographic pool aids decisively in maintaining a superior standard of work production.

The objectives of a stenographic pool are:

1. Standardizing quality and lowering production costs.
2. Handling typing of all kinds.
3. Keeping necessary records of stenographic work done.
4. Transcribing dictation on modern equipment.
5. Handling tabulated work figures, schedules and fill-in jobs.
6. Handling duplicating jobs.
7. Taking care of miscellaneous secretarial work.

SELECTION OF PERSONNEL

Personnel must maintain a required quality of production and also meet the service schedule. Operators need a good educational background, should have high personal qualifications, and should be energetic, intelligent and, most of all, efficient. First preference should be given applicants who have had training in the field of business administration.

The supervisor should have leadership ability, she must be able to organize work for proper distribution, must be a capable typist and be able to take dictation, and she needs a personality that will help to make the pool a success.

Applicants applying for positions in the pool should be interviewed by the

supervisor as well as tested. Only those persons who will be aware of the school's policies and traditions should be employed.

MATERIALS AND EQUIPMENT

No department can operate efficiently unless its equipment is modern and in good working condition. That is why the supervisor must select the best machines to be used. Along with the use of standard typewriters (long and standard carriages), electric typewriters are a requirement in the stenographic pool. Some typewriters with pica type are needed and some with elite type.

Dictating machines and the transcribing machines are easy to handle and operate. All dictation is recorded on a disc at 33½ r.p.m.; discs in 8, 15 and 30 minute sizes will be needed.

SUPERVISOR'S DUTIES

The pool's supervisor assigns the work to her staff. She checks all finished work and gives assistance when there is an overflow of work. She must see that all materials are proofread before they are returned to the sender, and that those who dictate are kept supplied with discs. When rush jobs are requested, the supervisor takes into consideration the importance of the work and cooperates in every way possible.

The policy on examinations is to prepare them for duplication and return them to the sender the same day.

Special instructions and procedures in the use of the dictating machine are sent to the dictator. He must send his discs to the department to be transcribed, preferably in the morning if they are to be returned in the afternoon. He gives instructions as to the

number of copies desired and he either discusses with the supervisor any unusual instructions or the instructions are placed on the disc. The hour at which the material is desired should also be stated.

Instructions as to the policy of the stenographic pool should be sent to each department that is to use the service. Work received in the department before noon should be completed and returned to the sender the same day. This part of the schedule accomplishes two things: (1) It encourages dictators to dictate in the morning, and (2) it ensures a steady flow of work through the department. The service schedule should include collection and delivery of work.

The stenographic pool and the printing office should be centrally located on the campus, preferably in the same building. There should be a close relationship between the personnel of the printing office and the personnel of the stenographic pool. Part of the pool's work is to prepare work for duplication. Consultation with the printing office gives the supervisor a chance to complete the printing jobs according to the scheduled service of the department.

The photography office should be a part of the printing office but a separate department. Complete cooperation between the two is necessary. Production of clear copies and getting them out on time are points to be considered by the supervisor.

FINANCING THE POOL

The stenographic pool should be allotted a budget for materials (paper, envelopes, carbon paper, stencils, folders, and so forth). The departments assigned to the pool should furnish their own departmental stationery if they want their work to be done on it. For miscellaneous work the stenographic pool furnishes the materials. The institution should provide the service of the stenographic pool. A complete record should be kept of all work done for each department.

The problem of most pools has been that of achieving and maintaining a superior standard of work with inadequate financial resources. Today secretarial personnel gets high salaries. Through a stenographic pool it may be possible to employ fewer and better qualified workers and to pay them more.

The pool's success will depend on the excellence of the service it renders. #

Give the Editor What He Wants

and your releases land in the composing room
instead of the wastebasket

RICHARD P. BAILEY

Director of Public Information
Board of Wisconsin State College Regents, Madison

Montage of newspaper clippings on Release No. 4, showing varied use made of it.



"IF A STUDENT TOOK ALL OF THE courses offered by the state colleges in Wisconsin he would graduate in 2267 A.D., having been a student for 311 years. He would read more than 500,000 books, write 3732 term papers, and sweat through more than 11,000 examinations."

"Do today's high school seniors in Wisconsin know as much as their grandparents did as seniors in 1913? Grandparents knew the name of the president of the United States, but they had trouble naming the world champion baseball team, the author of Huckleberry Finn, and the inventor of the telephone. Only half of them knew what an article should sell for to bring a 50 per cent return, if selling it at 10¢ brought a 25 per cent return. (Answer: 12¢)"

These are samples of filler material sent regularly to 80 weekly newspapers and 14 dailies last year by the office of the board of regents of Wisconsin state colleges.

The project began after a query of a few editors revealed that they were interested in more information about education with state and local appeal. "Why don't you send us fillers on education?" they asked.

Why not, indeed! There was nothing the director of the colleges would like better. And so it began. Three sample articles went out to the more than 300 newspapers in Wisconsin. Back from one out of three of the papers came a request for more material.

The first release identified the "average" state college freshman in Wisconsin. She was 18 on her last birthday and was graduated in the upper half of her class. She plans to be a teacher, but one of her two best girl

friends is enrolled in liberal arts. Her hometown has a population of less than 5000. After two years of teaching at a salary of \$3700 she will marry a boy she met at college.

Miss "Average" was compiled from enrollment records, college placement reports, and a doctoral dissertation.

Newspapers use the material in many ways. It appears under a "Wisconsin Education Forward" heading furnished by the regents' office in mat form or is printed in whole or condensed form under a headline written by the newspaper. Sometimes the information appears as an editorial, but oftener it is found as filler in competition with the distance from the earth to the sun or the fact that a dinoceras is a huge hooved animal with six horns, now extinct.

Such material, released by someone with a vested interest, floods the newspaper office. One Wisconsin editor claims that an average of 5 pounds of the "stuff" moves over his desk to the wastebasket weekly. It has earned the name "throwaway" because of its often well deserved fate.

But an editor can't afford to miss material of interest to his readers. If the throwaway meets the reader interest test, then its destination changes from the wastebasket to the composing room. And there is a vast and largely untapped fund of reader interest in education!

RESPONSE EXCELLENT

The response from Wisconsin newspapers has been excellent. Seventy-eight papers used the first release and, though the weekly use has not always remained that high, it is estimated that an average of 40 newspapers will use the material on any one release date, or a month or two or six months later.

Early in the year the United Press correspondent in Madison asked to receive the filler articles. Since then he has picked up, rewritten and put on the state wire every second or third week's production. From this has come radio and daily newspaper usage.

Some of the most used articles have explored or answered: college in grandma's day; why should a woman be educated?; beginning teachers' salaries in Wisconsin; college presidents' comments on education in 1905; college presidents' opinion of education and youth today; city kids *vs.* country kids in achievement; the worries of young people; working one's way

through college; dating in high school and college; advice from college students to high school students; high school records of college student leaders; college traditions; liberals in teaching and politics; college and university summer and fall enrollments; who should go to college? and what do teachers really want?

The search for next week's subject is continual and sometimes exhausting. Historical material comes from the archives of the state department of public instruction. Questionnaires furnish a flood of usable material. Research directors of the Wisconsin Education Association, the University of Wisconsin, and the state colleges are most helpful. Educational journals and doctoral dissertations yield suggestions that can be expanded and localized to fit into a Wisconsin setting. Authorities are interviewed on their particular educational specialty.

Sometimes the educational filler for the week loses out in competition with the distance from the earth to the sun and the six-horned dinoceras. Least used bits of information were: (1) a guest column by a college president; (2) the teacher shortage; (3) increasing birth rates and crowded schools; (4) dormitory space shortages at colleges and the university; (5) student health today and 50 years ago.

It is estimated that 2000 times during the year educational filler was printed by Wisconsin newspapers in some form or another. Here were 2000 plugs for education that would never have seen light unless dug out and released by someone in the field of education. Reporters could not take the time to get the "story."

MUST BE ACCURATE, SHORT

The administrator who wishes to contribute filler to newspapers will find a ready market if Wisconsin newspaper editors are typical of those in other states in the nation. He need only find someone with time and inclination to do it. The material must be accurate, concisely written, and short (never more than one page).

The Wisconsin release began as a 400 word broadside. A spot-check of editors showed that it was too long and it has slimmed down to a maximum of 300 words. A few editors would use the material if it were only half as long. Never has an editor complained that it was too short.

One editor said that he would accept slightly more copy "if necessary," but

he drew the line at 10 column inches, or about 500 words.

The author of the material may have to be content to write without a by-line. His name is less important than his facts speaking out for education. But he may be rewarded by a note of appreciation from a busy editor. Such notes come infrequently to the Wisconsin regents' office.

"Congratulations," wrote Editor Ellsworth Coe of the 100 year-old weekly *Whitewater Register*. "This is one of the best columns of its type I've seen. Each has been excellent and the variety is remarkable."

"We have been pleased with the articles and their acceptance by our readers," wrote Kris Gilbertson, managing editor of the *Rhineland Daily News*.

"I have had the following comments from readers," wrote another editor: "interesting," "informative," "you're lucky to have them," and "who writes them?"

With this reaction as a guide the Board of Wisconsin State College Regents is embarking on its second year of providing educational filler to Wisconsin newspapers.

SERVICE YEAR OLD

As the weekly release passes its first birthday more than 100 weekly newspapers are requesting it. Even a daily newspaper in neighboring Minnesota has asked for the material, and the papers of metropolitan Milwaukee occasionally pick up and enlarge on the release for Sunday feature articles, complete with pictures.

The administrator who would save himself "growing pains" in releasing filler should heed the "do's and don'ts" learned in a year in Wisconsin.

Do: (1) Keep it short. (2) Insist on a Thursday release date if weeklies are involved. (3) Send out at least a week in advance of the release date. (4) Send regularly, weekly if possible. (5) Use a distinctive envelope and copy paper that editors can readily identify. (6) Use interviews and polls for the best articles. (7) Insist on accuracy.

Don't: (1) Expect 100 per cent usage. (2) Plead for usage. (3) Use the "jargon" that often characterizes educational writing. (4) Ask for a by-line. (5) Expect a page one position. (6) Insist on all-or-none treatment of an article. (7) Underestimate the reservoir of reader interest in education. #



In Southwestern's fine arts building

Theater Acoustics at Its Best

CAMERON FAIRCHILD

Cameron Fairchild & Associates, Architects, Houston, Tex.

ANY STUDENT WHO CAN SPEAK DISTINCTLY enough to be heard across the dining table can be assured that when he steps on the stage in the new Alma Thomas Fine Arts Center at Southwestern University, Georgetown, Tex., his voice will carry clearly and without distortion to every one of the 960 seats. Not only that, if he wishes to make a trial run of his lines, he can

do so with the auditorium empty, in full confidence that when the student body is assembled the sound effect will be identical in both cases.

In the past many architects have stumbled upon happy combinations of shapes and materials so that they had theaters where the spoken word was heard distinctly and concert halls where instrumental and vocal music

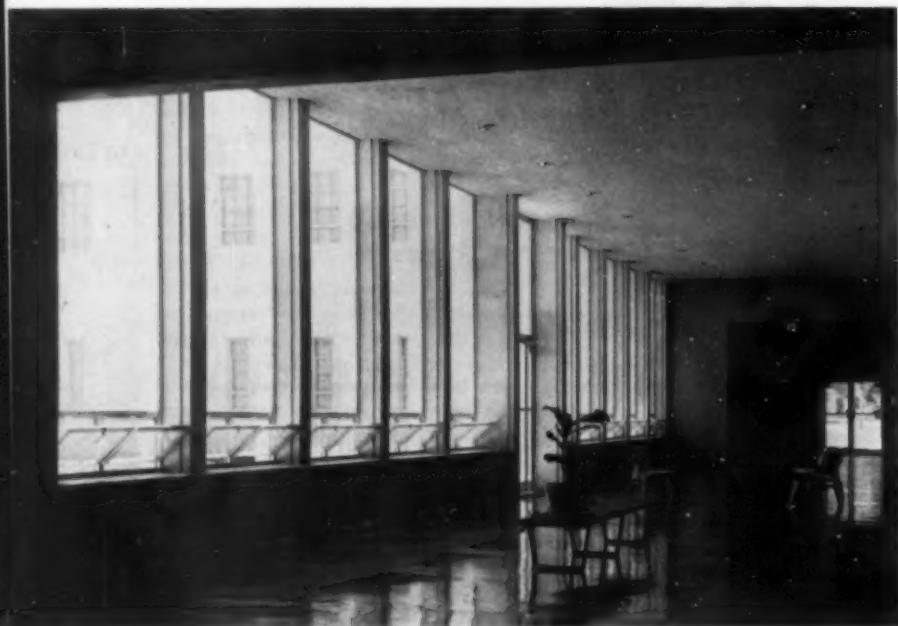
was heard without distortion, but it has been only in very recent years, with the advent of the science of acoustics, that it has been possible to produce a theater where the nuances of a whispered line can be heard.

You might expect a cleverly contrived system of concealed microphones with strategically placed loudspeakers connected to a sound am-



FIRST FLOOR PLAN

Interior view of gallery by day. It is a part of the theater foyer.



plifying system operated by a technician with earphones and with hands busily turning dials, eyes glued to fluctuating impulses on a screen. Not so. Here, as in many other phases of architecture, the simple solution is the best, for the exceptional acoustics of the auditorium are inherent in the materials and in their shape.

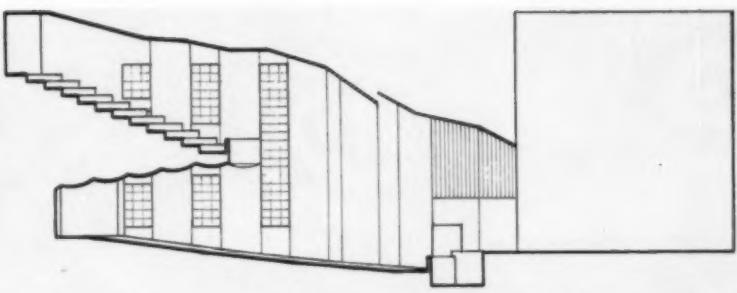
Most persons have been taught to think of acoustical correction in terms of acoustical absorption, and there is some acoustical absorption in this unusual room, but it is more than that—the shape of the room, the materials used, and their specific placement. For instance, a glance at a cross section of our building shows that the auditorium is essentially a horn, and that the ceiling, which is of hard plaster, is shaped in such a way that sound waves originating from the stage are reinforced by the same sound waves being deflected down from the ceiling to the listeners, so that in a given

seat the sound will be heard only once. The second bounce of that sound wave is absorbed or is deflected to an absorptive area.

The side walls are of thin mahogany plywood, which is acoustically absorbent to all of the lower range of frequencies but reflects the higher frequencies back to the audience in the same way that the ceiling reflects all of the frequencies to the audience. This results in a reinforcing of those higher frequencies that add color and clarity to sound.

All walls that face toward the stage, that is to say the front wall of the balcony and the back wall of the auditorium itself, are highly absorbent acoustically, so that essentially all sound is completely absorbed. This is achieved by the use of the same thin mahogany plywood, which is perforated and backed up with a heavy mat of rockwool.

The reason the sound effect is the same whether the room is full or



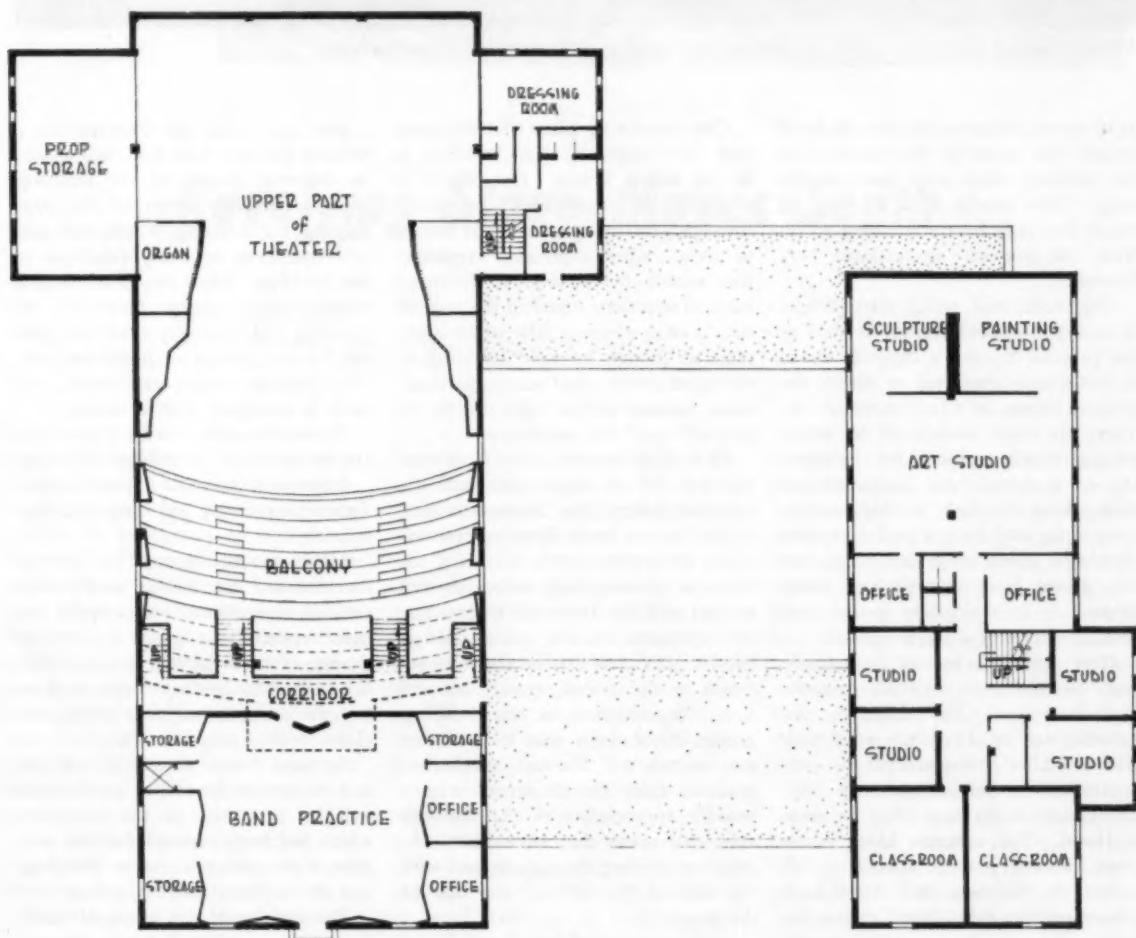
LONGITUDINAL SECTION THRU CENTER OF THEATER

5 0 5 10 15 20 25

empty is due to the fact that the aisles are heavily carpeted and the opera chairs are covered with a heavy pile mohair. These have the same absorption as the clothes students ordinarily wear on the campus. This is the result of considerable calculation and testing of materials; for instance, transportation cloth or other flat woven fabrics will not do the job as well, and there is a material difference

in the effect produced. These results are not from haphazard estimates, but rather are the result of careful and minute calculations based on years of research and tests by the acoustical consultants, Dr. C. P. Boner and his associates at the University of Texas. They indicated the type of materials used and their precise placement.

The band practice room, located back of the balcony, is so contrived



SECOND FLOOR PLAN



Interior view of gallery at night. Art, drama and music departments are in one building.

as to shape and materials that the band sounds the same to its members in the practice room as it does on the stage. This results in a sureness of touch that may have something to do with the students' professional performance.

The recital hall, which seats 45 and is used for student recitals as well as for practice by the a cappella choir, is acoustically corrected to match the practice rooms, of which there are 28. There are eight studios, all of which are acoustically corrected for the training of students. An instructor can walk along the hall in the practice room wing and hear a muted version of what is going on in each room, but that sound from one practice room to another is negligible, so that one student does not disturb another.

Here again the answer is a simple one. No elaborate materials or techniques were used. The doors to the corridor are of $2\frac{1}{4}$ inch solid oak with a rubber gasket around the perimeter and a felt weatherstrip that drops down to the floor when the door is closed. The concrete block partitions between practice rooms are 10 inches in thickness and have hard plaster on one side. Hard plaster on both sides of the partition would make the sound too brilliant.

One interesting piece of equipment that the university has installed is in the music library. Here there is a series of turntables connected through a rectifying system, and thence to some rather expensive earphones that enable the student to listen to musical selections tuned to the volume that is most pleasing. The effect is the same as though he were listening to the artist under ideal acoustical situations, because of the high fidelity reproduction of the earphones.

Of further interest is the incorporation of the art department and the spacious gallery that becomes a part of the theater foyer. Here current exhibits of student work, traveling exhibits of contemporary artists, as well as loan exhibits from the several fine art museums in the state, are on exhibit. It is felt that by the incorporation of the drama, speech, art and music departments in one building group, the students who take no fine arts courses will, through association, graduate from the university with a broader appreciation of the fine arts and with tastes that have been subjected to training through contact with the best of the old and the best of the new.

Little or no vandalism has occurred since the building was occupied about

a year and a half ago. Perhaps this is because students have had such a hand in different phases of the building, such as the fabrication of the stage rigging, the building of sets, and general operation of many functions of the building. Since this is a teaching stage, there is ample room for the painting and carpentry work that goes on, for the storage of props and sets. The dressing rooms are ample, and each is equipped with a shower.

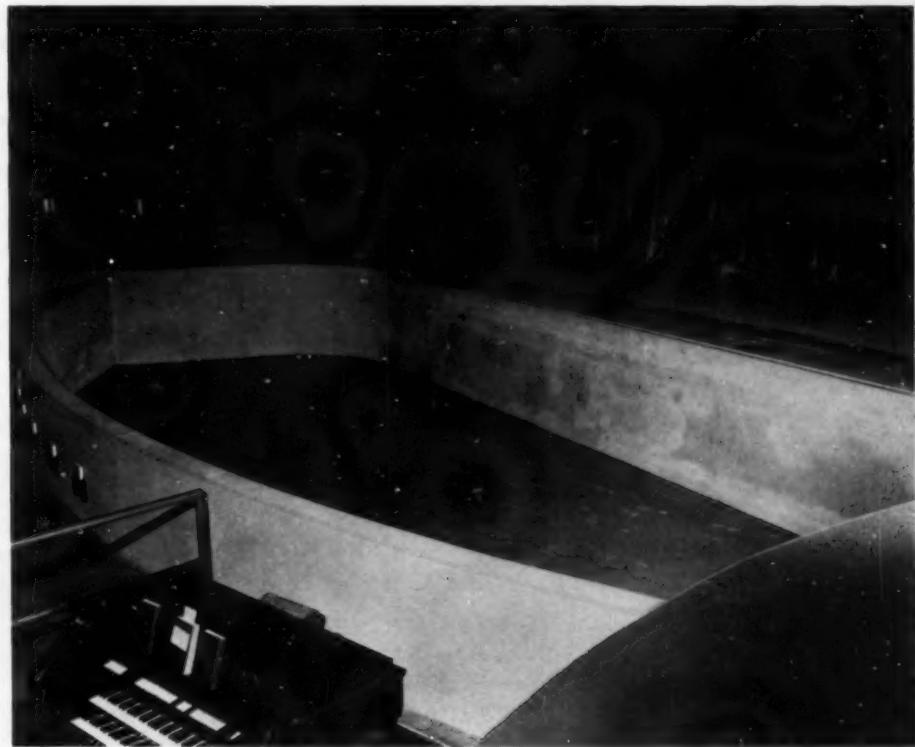
A wooden cover can be placed over the orchestra pit to enlarge the stage.

In general, the color scheme is plum (mahogany walls) and turquoise (upholstery).

Music practice rooms are air-conditioned and the theater itself, while not air-conditioned, has a quiet exhaust system that gives a complete change of air every two minutes. This is a part of the heating system so there is never the stale warm air often associated with a large assembly.

At some future date small concerts and theater-in-the-round productions will be presented in the courtyard, which has been planned for this purpose with proper access to the stage and to the foyer and art gallery.

The exterior of this group of buildings conforms to an architectural style adopted some years ago. #



Revolving stage at Bob Jones University makes use, by means of a third elevator lift, of the orchestra pit. It can become a forestage when space is needed.

Revolving Stage Moves South

EVA CARRIER

Speech Department, Bob Jones University, Greenville, S.C.

AT THE DIRECTOR'S CUE, THE PRESS of a button, and the flip of a switch, the largest screw lift stage in America can be set in motion at Bob Jones University. The university, located in Greenville, S.C., installed in the short space of two months more than \$100,000 worth of special stage equipment, including a 27 foot revolving stage, a gold contour curtain, plus special effects lighting machines. Only the Chicago Civic Opera House and Radio City Music Hall in New York, with their hydraulic lift stages, are comparable in versatility.

The behind-the-scenes purchase and installation of this equipment lend themselves to a story worth telling.

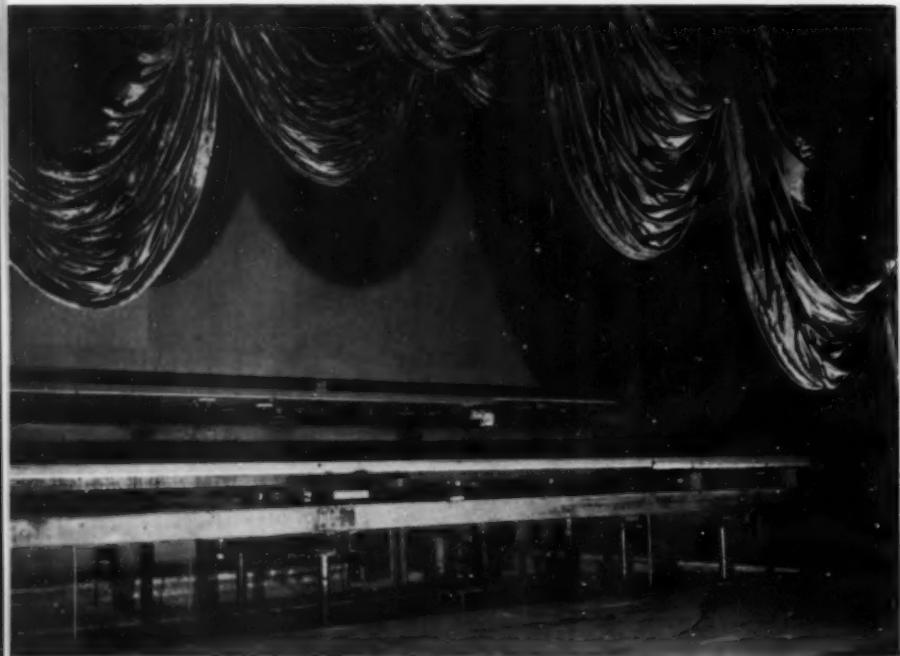
Dr. Bob Jones Jr., president of the university, heard that the huge, three-balconied Center Theater in New York

City was to be liquidated and that the stage equipment was to be demolished. He investigated the possibilities of purchasing the equipment and sent Mrs. Gilbert Stenholm, director of unusual films, and Mel Stratton of the production staff to New York to study the adaptability of the machinery for the Bob Jones University stage. An agreement was made with Harry Avirom of Lipsett, Inc., contractors, to dismantle the stage instead of demolishing it and to sell the equipment to the university for the price of dismantling and shipping it.

An amateur clock repairman who has taken a clock apart, seen all the pieces, and then wondered how in the world he could ever get it back together again without instructions, could microscopically appreciate the problem

faced by university workmen when this enormous revolving stage with its three elevator lifts was thrust upon them piece by piece—and without accompanying chart or compass. But the builder was found in the person of Mr. Stratton, who had watched carefully as the stage was disassembled and shipped the thousand miles to its new home. Under his direction, the mass of jumbled steel began to take shape and to fall in place like an oversized jigsaw puzzle.

The three sections of the large revolving stage were originally set upon three separate elevator lifts, each containing six $4\frac{1}{2}$ inch screws 25 feet long. Two of the elevator lifts were installed to support the center and upstage sections of the turntable. The third elevator lift was completely re-



Two center lifts support center and upstage sections of great turntable. Here are front and side views of lifts and revolving stage from below.



modeled and molded to fit the shape of the orchestra pit, making possible the conversion of the orchestra pit into a forestage addition to the stage proper.

The two revolving stage elevators, each operated by 50 h.p. motors, have a lifting range of 24 feet, *i.e.* each section may be lowered 12 feet below the level of the stage floor into the scene dock under the stage or raised 12 feet above the stage floor level. The forestage elevator, which is set on 14 foot screws, descends 12 feet below eye level of the audience.

The entire stage floor was rebuilt. This was done to ensure smooth movement and instant response when the large round face is activated to turn either clockwise or counterclockwise in the space of 45 seconds.

The new \$60,000 gold contour curtain proved excellent in its adaptability. The original 78 by 240 foot Center Theater curtain was restyled to fit its new setting. Not only was the contour hung in display, but also a traveler, an act drop, and a scalloped border were created with the excess material.

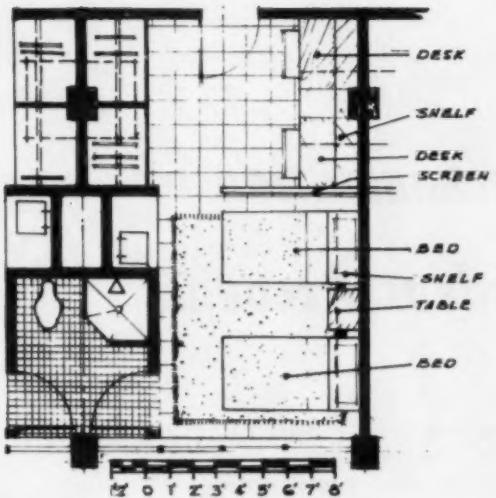
The revolving stage *per se* has not become standard equipment in schools and universities because it is expensive, and also because it sometimes imposes sharp limitations on the shapes of settings. But the installation at Bob Jones University, instead of limiting shapes of settings, offers even greater possibilities for variety and serves as an expedient for rapid scene changes.

Indigenous to the university is the unique Sunday afternoon vesper program. Each Sunday afternoon throughout the year the university presents an hour program of sacred music, dramatic readings, instrumental and vocal solos, trios, group ensembles, and concert band and orchestral arrangements as a regular feature of its schedule.

In addition, the school specializes in Shakespearean productions. The new stage offered greater opportunities for enriching interpretations and for abetting the precision movement and the silent, rapid scene changes so vital in Shakespearean productions for Twentieth Century audiences.

Likewise, the annual productions of the University Opera Association play an important rôle in the year's activities. Faculty and students participating in *Faust*, *Aida*, *Rigoletto* or *Il Trovatore*, with Metropolitan Opera stars singing leading rôles, realize new inspiration from the ingenuity of these innovations.

#



Plan and views of student bedroom for two.



St. Louis University's new

Hall for Women

LEO A. DALY COMPANY, Architects and Engineers





Charges and credits are recorded and classified by this machine, which also posts income accounts for dormitories.

A SIMPLIFIED SYSTEM FOR MECHANICAL posting and controlling all charges and all credits to students' accounts, by residence hall, and for recording and classifying all cash income by residence hall, with an automatic daily tie-in and proof of all accounts results from a new "window posting" machine modified specifically for the use of colleges and universities.

In order to understand the system, we must first understand something about the equipment. It looks something like a very large adding machine, has the same kind of keyboard, and is run in much the same way. But instead of having only one "motor bar" at the right, there is a row of small motor bars or buttons, each of which causes addition into its own individual total: cafeteria, residence, residence (misc.), apartments, guest rooms, guest meals, student cash receipts, other cash receipts, miscellaneous credit, charge.

There are also buttons for picking up an old account balance and printing the new balance, and other buttons for printing description (account number, room and board, refund, penalty). Each is clearly labeled, which makes for simple operation.

When we say "pick up an old account balance and print the new balance," we refer to an individual stu-

dent's accounts receivable ledger card or an income ledger card. In other words, we have the ability to post, at the window, to a ledger card, and *at the same time* to classify the entry according to one of the foregoing 10 totals. A receipt (Fig. 1) may be issued at the same time; all entries print on a journal tape locked inside the machine.

STUDENTS' ACCOUNTS

With this brief explanation of the mechanics in mind, let us first discuss the processing of students' accounts. We have about 6000 students. There are eight residence halls and two apartments, in addition to faculty housing.

The list from the dean of men or dean of women is used to head up a ledger card for each student. But *no entry is made until the student comes in to make his first payment*. Some students who signed up originally fail to enroll; others are selected as counselors or proctors and so receive board free; others are notified late about scholarships, and so forth. Therefore, to set up the accounts receivable before the first payment is made would involve extra bookkeeping.

When the student makes his first payment, his ledger card is inserted

in a "chute" at the front of the machine. A receipt is inserted in another chute next to it. The account number is entered and the student is charged, through the "charge" key, with the total amount due. The total charge prints on the ledger card, but not on the receipt. Payment is then entered through the "student cash receipts" key, and the new balance is printed. The receipt is the student's admission ticket to the residence hall.

We wish to know not only our overall accounts receivable debit and credit figures, which are automatically accumulated by the machine, but also the figures for each residence hall. Therefore, the individual ledger cards are striped in different colors at the top, according to residence hall, and they are filed in separate compartments for each residence hall. When a card is active—that is, when a student makes a payment—it is not immediately replaced in the file; instead, it is put in a box next to the machine. At the end of the day, the cards are sorted by color and add-listed to get totals for each residence hall. A recap must prove against the over-all machine totals. Balances are proved as a part of this operation.

Now, it might be asked, since there are so many totals on the machine,

Mechanization of Student Accounts

**will prove highly satisfactory
except in very small colleges**

C. B. MacDONALD

Controller, Western Michigan College, Kalamazoo

BOARD & ROOM					
NAME: GREEN, ROBERT J.			STUDENT ACCOUNT NO. 1,233.		
DORM: WALWOOD					
DATE	SYMBOLS	DEBIT	CREDIT	BALANCE	PREVIOUS BALANCE
NOV 15 56	ND 11 A	**285.50			
NOV 15 56	RS 11 A		**125.00	*****160.50	***160.50
NOV 25 56	RS 11 A		****80.25	*****80.25	****80.25
4					
5					

NAME: ROBERT J. GREEN				
DORMITORY: WALWOOD				
BOARD AND ROOM				
THIS IS YOUR RECEIPT				
DATE	SYMBOLS	ACCOUNT NO.	PAYMENT	BALANCE
NOV 25 56	RS 11 A	***1,233	****80.25	*****80.25

WESTERN MICHIGAN COLLEGE KALAMAZOO, MICHIGAN	
PARENTS OR GUARDIAN'S NAME Mr. & Mrs. KENNETH L. GREEN	
ADDRESS 2052 UNION, S.E., GRAND RAPIDS, MICHIGAN	
WALWOOD UNION AND RESIDENCE HALLS Western Michigan College, Kalamazoo, Michigan	

Fig. 1

CAFFETERIA RECEIPTS					
NAME: MRS. JUDY SCHUM			DORM: WALWOOD		
DORMITORY: WALWOOD			THIS IS YOUR RECEIPT		
DATE	SYMBOLS	DEBIT	CREDIT	BALANCE	PREVIOUS BALANCE
NOV 15 56	CF 11 A		***256.83	*****256.83	
2					
4					

NAME: RECEIVED OF: Mrs. Judy Schum				
DORMITORY: WALWOOD				
BOARD AND ROOM				
THIS IS YOUR RECEIPT				
DATE	SYMBOLS	ACCOUNT NO.	PAYMENT	BALANCE
NOV 15 56	CF 11 A		***256.83	****256.83

WESTERN MICHIGAN COLLEGE KALAMAZOO, MICHIGAN	
PARENTS OR GUARDIAN'S NAME	
ADDRESS WALWOOD UNION AND RESIDENCE HALLS Western Michigan College, Kalamazoo, Michigan	

Fig. 2

Fig. 1: The new "window posting" machine prints a receipt for the student as his individual account card is credited. The balance is computed automatically. Fig. 2: Cash receipts for residence halls are posted to individual income accounts. Fig. 3: Machine totals are cleared on an Executive Report at the end of each day, giving a summary of the day's transactions.

why don't we use a separate accounts receivable total for each residence hall? Then we wouldn't have to add-list or recap. We could do this, to be sure, but we prefer to use the remaining totals to control all cash income, as we will explain later. Faculty accounts receivable are processed just like students', with a separate total for cash received.

Cash payments made for residence rooms, houses, apartments, guest rooms, and guest meals are controlled, as mentioned, through separate totals on the machine. The cafeteria collections at each residence hall, as shown by cash register tape from each cafeteria, also are put through the machine.

The procedure is basically the same as that for recording accounts receivable, except that, instead of an individual accounts receivable card, an income card for that classification of income and that residence hall ("Guest Rooms—Davis Hall") is inserted. These income cards, too, are striped with a color designation. Figure 2 shows a typical posting.

At the end of the day, the machine provides an instant figure for cash balancing. The buttons from "cafeteria" to "credit"—all the income buttons—are subtotalized. This causes addition into another total, which thus represents all cash taken in; we know immediately whether the cash balances or there is an overage or a shortage.

The totals are then cleared out on an "executive report" (Fig. 3), which gives a summary of the entire day's

Fig. 3

EXECUTIVE REPORT				
MACHINE NO. 7-491		AUDITOR <i>Pearce</i>		
DATE	SYMBOL	DESCRIPTION	MACHINE TOTALS	TOTALS
NOV 15 56	CF 11 Z	CAFETERIA	*****256.34Z	
NOV 15 56	RS 11 Z	RESIDENCE	*****285.50Z	
NOV 15 56	RW 11 Z	RESIDENCE-MISC.	*****7.00Z	
NOV 15 56	AP 11 Z	APARTMENTS	*****65.00Z	
NOV 15 56	CR 11 Z	GUEST ROOMS	*****12.44Z	
NOV 15 56	GM 11 Z	GUEST MEALS	*****124.69Z	
NOV 15 56	AB 11 Z	STUDENT ACC/REC.	*****10.00Z	
NOV 15 56	AR 11 Z	ACCOUNTS RECEIVABLE	*****1.079.00Z	
NOV 15 56	MC 11 Z	MISC. CREDITS	*****9.36Z	
10		CASH OVER-SHORT	*****80.25+	
11		TOTAL DEPOSIT	*****2699.08Z	
12		MISC. DEBIT	*****292.50Z	
13				
14				
15				
16				
17				
18				
19				
20				

LOCK DETECTOR

transactions. The only reason for subtotaling first is to find any cash difference. An overage or a shortage is inserted through a "plus" or "minus" key as part of the clearing operation.

When we have listed and recapped the student accounts receivable and the income accounts, by residence hall, and proved back against the machine totals (an operation that takes little time), we know absolutely that every account is correct.

The multiple totals obtained under this system make all the difference between 100 per cent accuracy and a hit-and-miss procedure. We say this in the light of our own previous experiences. Formerly, we used a small receiving machine at the cashier's window. On accounts receivable transactions, it was able to add or subtract and print a new balance. But it did

not have even one accumulating total. This meant that at the end of the day we had to run each income classification, as well as accounts receivable, in total, and then sort down, add-list, and try to prove back. If there was an error—a frequent occurrence—everything had to be checked out until it was found. The procedure was not only slow and laborious, but difficult to control.

I mention this because any college controller who contemplates mechanization of the cashier's operation may find it easy to feel, at first glance, that a small carriage type of machine will do the job, particularly if it has at least one accumulating total. Such small machines are available from many manufacturers. None of them, in our opinion, will do an adequate job except for a very small institution.

It is better to remain on a pen-and-ink system until such time as the investment in a multi-total machine can be made.

Another question that might come to mind in regard to mechanization is: How do you handle expense accounts and other general ledger accounts? We handle them with pen and ink. We are well aware that it is possible to get a piece of equipment that will "do everything." But the trouble is that in controlling and classifying cash receipts, any all-purpose machine (available for the same investment) is inadequate. General ledger accounting is no problem. If you can design an almost automatic setup for the cashier's operation, all other routine bookkeeping can be taken care of simply—the "big job" has already been done. #

New York courts are now

Friendlier to Charitable Trusts

T. E. BLACKWELL

Educational Management Consultant, Washington University, St. Louis

FOR MANY YEARS THE COURTS OF New York have been out of step with the rest of the country on the question of the degree of protection to be extended to charitable bequests against the claims of disappointed heirs.

A recent decision¹ of the appellate division of the New York supreme court represents a long stride toward conformity. It also writes one more chapter in the long history² of the transfer, by Syracuse University, of the work of its college of medicine to the State University of New York.

The contract for the transfer was signed in 1950. The officers of Syracuse were under the impression that some form of affiliation between the two institutions would be established

and that such relationship would permit the transfer of medical college endowment income without opposition from the donors or their heirs. However, when the contract of affiliation was not consummated, certain donors informed the officers of Syracuse that they would oppose any transfer of income to the state university.

In July 1954, the state university made an application to the court for a writ calling for specific performance of the contract of transfer. After some litigation,³ an out-of-court settlement was negotiated between the two institutions in January 1955. Syracuse agreed to seek the consent of donors of approximately 24 endowment funds before instituting *cy pres* proceedings

for the transfer of endowment income to the state university.

Acting under the terms of the 1955 settlement, Syracuse applied to the court for authority to pay the income from the endowments established by the wills of Francis Hendrick and of John L. Heffron. The heirs of both estates contested the proposed transfer of income. They contended that the bequests were for the specific purpose of supporting the work of the medical college of Syracuse University. As this college was no longer in existence, the trusts could not be administered as stipulated by the testators, and, therefore, the bequests should revert to them.

The court rejected this contention in the case⁴ involving the Hendrick bequest and ruled that the primary intention of the testator had been to

¹Application of Syracuse University, 156 N.Y.S. 2d. 779 (1956).

²Blackwell, T. E.: Syracuse University and Its College of Medicine, Coll. and Univ. Bus. 19:40 (August) 1955 and 21:49 (November) 1956.

³State University of New York v. Syracuse University, 135 N.Y.S., 2d. 539 (1954).

⁴State University of New York v. Syracuse University, 137 N.Y.S., 2d. 916 (1954).

⁵In Re Hendrick's Will, 148 N.Y.S. 2d. 245 (1955).

encourage medical research, and, only secondarily, to benefit Syracuse University. Syracuse was authorized to remit the income from the Hendrick endowment to the state university, to be devoted to medical and surgical research approved by the trustees of Syracuse.

The same court reached a contrary result in the case⁵ involving the bequest of John L. Heffron. The court took judicial notice of the fact that Dr. Heffron had been an alumnus of Syracuse and that he had served as dean of its college of medicine for many years. Justice Ringrose, in his opinion, reasoned as follows:

"The facts of a historical nature above related demonstrate beyond peradventure that the bequest in controversy was motivated by a deep sense of loyalty, reverence and affection for the college of medicine of Syracuse University and intended to benefit that institution exclusively."

In awarding the bequest to the heirs and next-of-kin of Dr. Heffron, the judge made the following observations with reference to the current status of the law of charitable trusts in New York:

"It is evident, however, from an examination of the applicable case law and statutes that, as yet, the policy of this state has not been declared as vesting in the supreme court jurisdiction to administer every bequest or gift of a charitable nature which fails of the particular purpose for which it was made."

The state university declined to accept this decision as final. It appealed for a more liberal interpretation of the law of charitable trusts. In almost every other state, the courts will not permit a charitable trust to revert to the heirs. If it becomes impossible to administer in accordance with the procedures set forth in the will or trust agreement, the court will, in effect, rewrite the document so that the charitable intention may be carried out

⁵In Re Heffron's Will, 150 N.Y.S. 2d. 251 (1955).

as nearly as possible under present circumstances. This ancient power of a court of equity to modify the terms of a charitable trust is called *cy pres*, from the Norman-French terminology of the early English courts.

The appellate court, acting upon the petition of the state university, came to the conclusion that it was time to bring New York more nearly into line with the rest of the country on this important question.

The following is an excerpt from this opinion:

"So we see that the court has great power to preserve and sustain bequests; that it will construe them liberally with that end in view, and that, in consequence with the application of these principles, it is rare indeed that the trust is held to fail altogether.

"We conclude that the *cy pres* doctrine applies to the facts of this case, and that the income from the Roger William Pease Memorial Fund (established by the will of Dr. Heffron) shall be distributed by the petitioner for a purpose as near as may be to that particularly contemplated by the decedent."

This decision must be read in the light of history to appreciate its significance. According to Anglo-American jurisprudence, the courts of this country will recognize and apply all general statutes of the English parliament, enacted prior to the American Revolution, as part of our own common law, unless rejected by action of the American people. Although charitable trusts were recognized by the courts of the Roman empire, we usually look to the famous Statute of Elizabeth⁶ as the origin of the concept in the common law countries. This act of the English parliament, passed in 1601, is considered to be an integral part of the common law of the majority of the American states.

However, in 1829, the New York legislature drafted a codification of the law of trusts, abolishing all except those specifically authorized in the new

⁶43 Eliz. C. 4. (1601).

code. The code⁷ failed even to mention the charitable trust. Five years later, when it was contended that the adoption of the code had impliedly repealed the Statute of Elizabeth, the court refused to entertain such a view "so contrary to the public interest and to the spirit of the age."⁸ However, the same court a few years later⁹ evidently yielded to the persuasive eloquence of counsel for disappointed heirs and held that the language of the 1839 code was too plain and unequivocal to be disregarded.

In 1891 the New York courts faced an acid test of their point of view on this subject. Samuel J. Tilden, a nationally prominent political leader, attempted to create a charitable trust of some \$5 million to establish and maintain a free public library for the city of New York. The court¹⁰ felt compelled to follow its rule previously established, but the size of the estate lost to charity and the national prominence of the donor stimulated a critical examination of the subject by legal scholars.¹¹

In 1893 the New York legislature took cognizance of the problem and attempted to correct the error of the courts by a statute,¹² termed by the newspapers of the period, "The Tilden Act." Either by intent or because of faulty draftsmanship, the act did not go far enough to reestablish in New York the entire structure of the common law with respect to the charitable trust and the equitable doctrine of *cy pres*. Gradually, however, the courts have themselves recognized the desirability of getting into step with the rest of the country and, as we have seen exemplified by this most recent decision, a charitable bequest in New York is now reasonably safe from the demands of the heirs.

⁷N.Y. Rev. Statutes (1839).

⁸Shortwell v. Mott, 2 Sandf. (N.Y.) 46, 51. (1844).

⁹Yates v. Yates, 9 Barb. Ch. (N.Y.) 324. (1850).

¹⁰Tilden v. Green, 28 N.E. 880. (1891).

¹¹Ames: *The Failure of the Tilden Trust*, 5 Harvard L. Rev. 289 (1891).

¹²N.Y. Laws of 1893, C. 701.

The administrative team can pull a bigger load if the professors and business office work in unison. Sometimes they don't. Next month a Texan, Prof. Robbin C. Anderson, will tell why academicians balk.

IN A BOARD OF TRUSTEES MEETING, a board member questioned the very large purchase of sheets for the student hospital. Subsequently, the controller telephoned the auditors requesting a check of the linens inventory and on hospital linens control.

A typical audit procedure for checking an inventory would be as follows:

Audit steps:

1. Determine all locations of the stock.
2. Physically count the items.
3. Attach a verified invoice unit cost for each item.
4. Make the extensions of the quantity of each item times the unit cost.
5. Arrive at a total inventory figure.
6. Determine inventory adjustments such as: (a) errors of auditor in counting or in calculation as uncovered in steps 7 and 8 below; (b) shortages and overages resulting from steps 7 and 8; (c) addition or subtraction of before or after inventory cut-off items—for instance, the addition of a before inventory purchase not yet received; (d) allowance for depreciation and reduction for obsolescence.
7. Compare inventory of auditor with departmental physical inventory and determine the differences for adjustments of book value of inventory.
8. Compare inventory of auditor with departmental perpetual inventory and reconcile and/or adjust the latter to book and audit inventory.

Steps 2, 3 and 4, and steps 5 and 6, in their item-by-item comparative aspects, may be done on a test basis depending upon the size of the inventory.

The auditors, in their pursuit of the hospital inventory problem, found a linens inventory which in size was geared to epidemic preparedness and not to the volume of operations. A much smaller inventory would have been satisfactory from a normal operational point of view. Furthermore, an epidemic preparedness factor is insignificant in the light of campus hospital experience in recent years.

Also, a special survey of college and university hospitals* I conducted revealed that 56 per cent of the campus-hospital respondents do not increase the size of their reserve stock in linens in order to be prepared for epidemics.

Keeping a linens inventory small and within immediate needs is reason-

*Marien, A. E.: Linens, China, Glassware and Silverware, *Mod. Hosp.* 81:130 (September) 1953.

Continuing a series of
articles on the subject:

Auditors Aid Administration

2—Accounting for Supplies Inventory

A. E. MARIEN

*Internal Auditing Division
University of Illinois*

able. Inventory losses arising from depreciation and obsolescence are greater than any savings from the quantity discounts of large purchases. Moreover, in case of an epidemic, higher prices for emergency purchases can be avoided by arranging to borrow stock temporarily from another department of the college or university having such supplies.

The size of the linens reserve stock of our student hospital since has been substantially reduced. Transfers of linens were made to other auxiliary enterprises of the university needing such stock.

Additional outgrowths of the auditors' attention to the foregoing administrative problem followed. In the first place, the auditors found that all linen, china, glassware and silverware purchases by the hospital were charged to operating expense and were not being carried on the books as assets. Second, such important inventory controls as a perpetual inventory were lacking. Finally, the operating statements of balance sheet, surplus, and income and expense needed revising in items other than inventory, current expense, and surplus.

Current fiscal year stock purchases were deducted from operating expense; final inventory figures for linens and

for china, glassware and silverware were set up as assets; surplus was increased by an increase in beginning surplus and a decrease in operating loss. Other asset and current expense items on the operating statements either were combined because of similarity or separated because of dissimilarity, and the accounts of certain statement sections were regrouped so that they would be placed in logical sequence. Through these changes, financial reporting was simplified and facilitated.

SET UP PERPETUAL SYSTEM

A perpetual inventory system was set up for linens, both reserve and in-service stocks, and for china, glassware and silverware, reserve stocks only. A system of periodic departmental physical counts was started. Business paper bases were instituted for entering, on a card system, perpetual record additions to stock through purchase and for recording withdrawals from stock because of extensive use, damage or obsolescence.

The service the auditors were enabled to render reached far beyond the efforts required to solve the administration's original problem of seeking the reason for a sizable linens purchase. #

Presence of highly toxic materials,
some of them radioactive, calls for
greater attention to—

Design and Uses of Laboratory Hoods

FREDERICK J. VILES Jr.

Industrial Hygiene Engineer
Massachusetts Institute of Technology, Cambridge

MANY POTENTIAL HAZARDS IN LABORATORIES originate from air-borne contamination. When combustible gases and vapors exceed concentrations in air of from 0.6 per cent to approximately 10 per cent, depending on the substances in question, explosive mixtures will exist. Fine combustible dusts in concentrations in excess of 20 milligrams per liter of air may likewise be explosive. Much smaller concentrations of some materials will cause systemic damage to the human body if inhaled for sufficient periods.

The maximum allowable concentrations (MAC) for continuous exposures to some of these contaminants are contained in Tables 1 and 2. The increasing use of highly toxic materials in laboratories warrants further comments on this subject.

The present listings of maximum allowable concentrations by the American Conference of Governmental Industrial Hygienists contain more than 100 gases and vapors that have limits equal to or less than 200 parts of the substances per million parts of air (ppm) and compounds of 15 of the 98-odd elements which have toxic dust, fume and mists limits equal to or less than 1 mg/m³ of air (0.15 ppm). Of the 15 elements, all soluble compounds of nine of the elements are included in these limits. These MAC values are fairly well established as is indicated by a further listing of tentative limits which include an additional 30 gases and vapors and 14 toxic dusts, fumes and mists equal to or less than the previously cited limits.

These MAC's are largely based on

From a paper presented at the Third National Conference on Campus Safety, Cambridge, Mass.

industrial experience and unfortunately include usually those substances that have graduated beyond the laboratory stage into industrial applications. Little information concerning toxicity is available for the great number of compounds that are still laboratory curiosities. It must be assumed, therefore, unless information to the contrary is available, that all substances capable of being air-borne (gas, vapor, dust, fume, mist) are potential hazards and must be handled accordingly.

The laboratory hood is commonly and most successfully used for eliminating or minimizing these hazards and should be respected as one of the most

important of all laboratory facilities. The purpose of a hood is to confine air contamination within the hood proper so that the contaminant concentration in the workers' breathing zone, usually outside the hood, is less than the maximum allowable concentration. This is accomplished by exhausting air from the hood, creating a flow of air from the room into the hood. In order to assess requirements of good design and proper hood application, the nature of air flow and air-borne contamination must be understood.

When air is exhausted into an opening, such as a pipe, the air converges on the opening uniformly in all direc-

Table 1—Maximum Allowable Concentrations for Continuous Exposures—
Gases and Vapors

	Ppm		Ppm
Acetone.....	1000.0	Hydrogen chloride.....	5.0
Acrolein.....	0.5	Hydrogen cyanide.....	10.0
Acrylonitrile.....	20.0	Hydrogen fluoride.....	3.0
Ammonia.....	100.0	Hydrogen selenide.....	0.05
Aniline.....	5.0	Hydrogen sulfide.....	20.0
Benzene (benzol).....	35.0	Methyl alcohol (methanol).....	200.0
Carbon disulfide.....	20.0	Methyl chloride.....	100.0
Carbon monoxide.....	100.0	Nickel carbonyl.....	0.001
Carbon tetrachloride.....	25.0	Nitrobenzene.....	1.0
Chlorine.....	1.0	Nitrogen dioxide.....	5.0
Chloroform (trichloromethane).....	100.0	Perchloroethylene (tetrachloroethylene).....	200.0
1,1-dichloroethane.....	100.0	Phosgene (carbonyl chloride).....	1.0
Dimethylsulfate.....	1.0	Phosphine.....	0.05
Ethyl ether.....	400.0	Stibine.....	0.1
Ethylenedichloride (1, 2-dichloroethane).....	100.0	Sulphur dioxide.....	10.0
Fluorine.....	0.1	Toluene.....	200.0
Formaldehyde.....	5.0	Trichloroethylene.....	200.0

Table 2—Maximum Allowable Concentrations for Continuous Exposures—
Toxic Dusts, Fumes and Mists

	Mg. per Cu. M.		Mg. per Cu. M.
Arsenic.....	0.5	Lead.....	0.15
Beryllium.....	0.002	Mercury.....	0.1
Cadmium.....	0.1	Selenium compounds (as Se).....	0.1
Chromic acid and Chromates as CrO ₃	0.1	Uranium (soluble compounds).....	0.05
Fluoride.....	2.5	Uranium (insoluble compounds).....	0.25

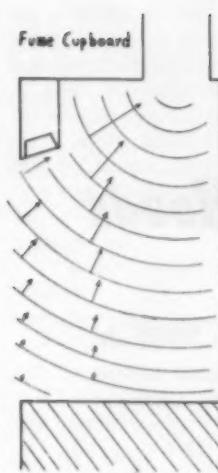


Fig. 1

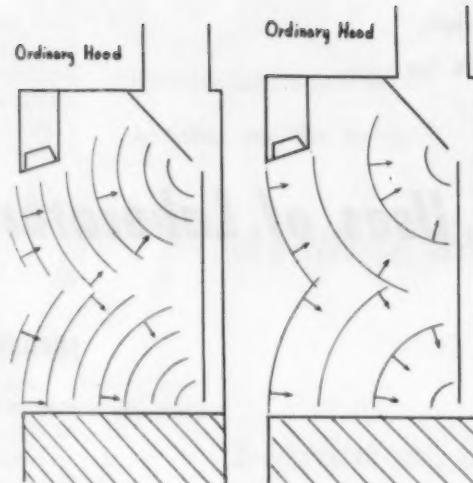
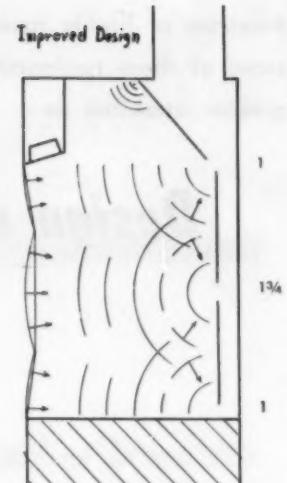


Fig. 2



tions if permitted to do so. For the purpose of simplification, the locus of points of uniform velocity some distance from the opening may be visualized as spherical surfaces with the common spherical center as a point in the middle of the opening (Fig. 1).

The constant velocity lines in the fume cupboard demonstrate an undesirable semivertical velocity vector at the hood face. This type of hood invariably possesses relatively high velocities at the top of the hood face and low, if not negligible, velocities at the bottom of the face. Since much contamination originates on the floor of the hood and laboratory workers have occasion to put their heads into the hood proper, good hood exhaust demands uniform and adequate velocities perpendicular to the hood face. These requirements are achieved with the ordinary hood design shown by

utilizing baffles and slots for exhaust air. In this case each slot opening possesses its own set of constant velocity surfaces tending to approach a flat profile at the hood face. By employing a third slot in the middle back baffle, a further improvement in the velocity profile is obtained (Fig. 2).

The hood plenum and slot openings are designed so that essentially all resistance to air flow in the hood occurs at the slot openings or, in other words, a uniform constant negative pressure is created throughout the plenum. This is usually accomplished by having the slot area less than two-thirds of the air passage cross sectional area in the respective parts of the plenum. The resistance to flow through the slot openings is equal to the slot entry coefficient times the slot air velocity head, and, if one assumes identical entry coefficients for all slots, the

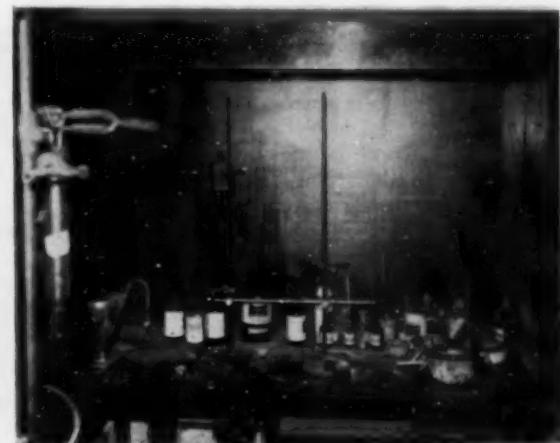
amount of air exhausted by each slot is proportional to its area (slot velocity equal for all slots).

By projecting equal constant velocity contours from each slot, one determines the relative slot areas by proportioning the chord lengths of the intercepted arcs. As shown in Figure 2 the top, middle and bottom slots are proportioned as 1, 1 3/4 and 1. In practice, however, both the bottom and top slots are made larger than indicated to overcome the velocity drag at the top and bottom hood surfaces. In addition, larger top slots assist removal of evaporated materials and increased bottom slot areas tend to overcome the handicap created by obstructions in the form of reagent bottles and equipment. Good design usually results in slot velocities between 700 and 1400 ft./min. It should be noted that the use of two slots will create a set of

Fig. 3



Fig. 4



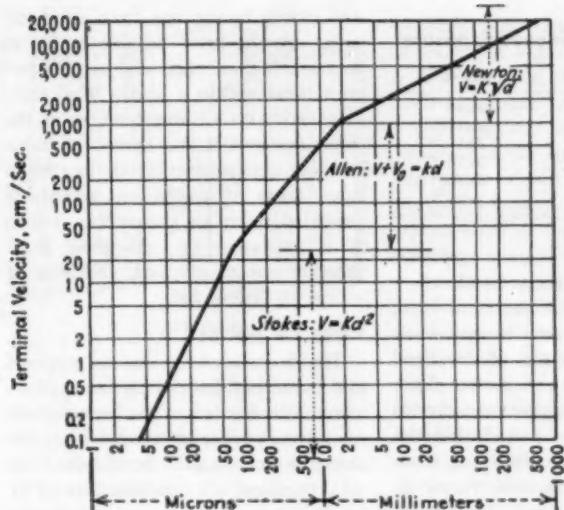


Fig. 5

Particle Size

vortices midway between the slots. These, being rather large, will create air disturbances quite some distance into the working area of the hood. The use of three slots, although doubling the number, results in much smaller vortices and less hood disturbance. The ideal back baffle would be one perforated with small holes, but the holes, being so small to provide the proper air balance, would soon clog with dirt and present frequent and difficult cleaning problems.

Perhaps the use of three slots is the most suitable compromise between good hood performance and the problems of construction and maintenance. It will be noted that a small slot or series of small holes at the very top of the plenum will often be used continually to remove contamination collecting in the upper confines of the hood. Typical and somewhat congested three and two slot hoods are shown in Figures 3 and 4 respectively.

To determine what air face velocities are required to prevent escape of contamination from within laboratory hoods, it is necessary to appreciate the nature of air-borne contamination and the mechanisms of contaminant dispersion. Substances other than the natural constituents of air are spoken of as contaminants and are present in the molecular state as gases and vapors or in the particulate state (aerosols) as dusts, fumes, mists and smoke.

Dust are solid particulates formed by any mechanical process such as grinding, cutting, sanding and crushing. In contrast, fumes are finely divided solids or liquids (< 1 micron) formed by condensation from the gaseous or vapor

state, such as metal fumes (ZnO , Fe_2O_3 , PbO , CdO). Mists are the liquid counterpart of dusts. Smokes are essentially the same as fumes but are formed from organic materials usually with partial decomposition of the original material.

In order for particulate matter to be respirable its size must be < 10 microns in diameter. The optimum particle size for maximum respiratory penetration and lung retention, according to the most recent information, varies from 0.4 to 2.0 microns depending on density and other particle characteristics.

Particle Kinetics. Particulate matter (aerosols) greater than 10 to 20 microns ($4/10,000$ to $3/10,000$ inches) will settle out of air quite rapidly as shown in Figure 5, which contains the terminal settling velocity of quartz dust in relation to particle diameters. To demonstrate that respirable particles for the purposes of exhaust hood applications are inseparable from air, Table 3 gives the distance traveled by different diameter particles when projected into still air at a high velocity. These calculations are made in "Industrial Dusts" by Drinker and Hatch and involve equating the loss in particle kinetic energy equal to the work done on the particle by the air drag forces.

The small distances traveled by respirable particles (< 10 microns) dem-

onstrate how inseparable such particles are from their air environment.

Respirable dust behaves as the air in which it is suspended and, therefore, hood velocities that prevent escape of air from within hoods are sufficient to control all particulate contamination. These velocities may be very small (< 50 ft./min.) if hood design and location are ideal. However, if the nature of operations within a hood create and direct high air velocities outward from the hood, such as is the case with grinding wheels and belt sanders, then adequate control velocities must necessarily be high. Such equipment is not common in laboratory hoods, but, if used, it should be located so as to direct the high air velocities created toward the back or side of such hoods. Tobacco smoke liberated at the face of a hood is an excellent test to determine the adequacy of hood velocities in retaining all hood air.

Diffusion. Aerosols even of small diameters (< 1 micron) exhibit negligible kinetic diffusion compared to molecular diffusion (gases and vapors). Diffusion calculations must be made for the latter, however, to assure satisfactory retention of gases and vapors within hoods. The fundamental diffusion equation is shown in Figure 6 along with a sketch of the velocity and diffusion vectors in a hood.

(Continued on Page 44)

Table 3—Particle Dispersion by Dynamic Projection

Particle Diam. (Quartz)	Initial V	Distance Traveled
2 MM (.08 inch)	10,000 ft./min.	70 Ft. ($V = 2000$ ft./min.)
10 Microns (.0004 inch)	10,000 ft./min.	1.6 in. ($V = 0$ ft./min.)
1 Micron (.00004 inch)	10,000 ft./min.	.016 in. ($V = 0$ ft./min.)

Table 4—Maximum Allowable Concentrations for Continuous Exposure

Substance (radioactive)	Ppm	Mg./m ³	Mc./cc.
Iodine ¹³¹	(4.5x10 ⁻¹²)	(2.4x10 ⁻¹¹)	3x10 ⁻⁹
Strontium ⁹⁰	(3.5x10 ⁻¹⁰)	(1.3x10 ⁻⁹)	2x10 ⁻¹⁰
Radium ²²⁶	(8.6x10 ⁻¹⁰)	(8x10 ⁻⁹)	8x10 ⁻¹²
Plutonium ²³⁹	(3.3x10 ⁻⁹)	(3.2x10 ⁻⁹)	2x10 ⁻¹²
Tritium (³ H)	(4.2x10 ⁻⁹)	(5.2x10 ⁻⁹)	5x10 ⁻⁹
Carbon ¹⁴ (CO ₂)	(3.9x10 ⁻⁹)	(2.2x10 ⁻⁹)	1x10 ⁻⁶

The air velocity must be sufficient to permit escape only of amounts which will result in below MAC breathing zone concentrations outside of the hood. The amounts escaping per unit time are dependent upon the concentration in and outside the hood, the diffusion constant, and the distance traveled. At equilibrium conditions and when all air leaving the room is by the hood exhaust, the amount of contaminant escaping must equal the amount being removed from the room by the hood or $m/t = C_1 AV$.

Calculations for gases reveal similarly low hood face velocities to overcome gaseous diffusion under most conditions of contamination.

The problem of gas and vapor diffusion becomes of much more importance when considering radioisotopes. The maximum allowable concentrations for some of the more hazardous and important radioisotopes are shown in Table 4.

Experience with many nonradioactive materials demonstrate that for ordinary laboratory manipulations of volatile liquids and solids in rooms averaging one air change every 10 minutes one may expect breathing zone concentrations approximating 1/500 to 1/1500 of the room temperature vapor pressure of such materials. It is this rule of thumb that suggests the use of laboratory hoods for materials with VP/MAC ratios in excess of 500 to 1000. If calculations are based on this premise, the equations follow in logical order.

ROOM AIR CONVECTION

It has been shown that with the exception of highly toxic (low MAC) radioisotopes, relatively low hood velocities are adequate to overcome the forces of particle kinetics and of gas and vapor diffusion. A third force of contaminant dispersion from hoods must now be considered. These forces, which originate outside of the hood, are air disturbances at the hood face which literally cause air to flow out of the hood into the room. This so-called room air convection is simply a relatively high room air velocity past the

hood face, which literally aspirates some of the air from the hood.

For good hood locations from 50 to 100 ft./min. face velocities are usually sufficient to prevent loss of any hood air into the room by this means. Since these velocities are higher than needed to prevent losses by particle kinetics and by gas and vapor diffusion, room air convection is the sole factor in determining adequate hood face velocities, highly toxic radioisotopes excepted. The importance of this fact is automatically transferred to the problem of hood location.

In Figure 7 will be seen a large, irregularly shaped laboratory with, for the purpose of discussion, hoods at various locations. When one considers that 100 ft./min. is only 1.14 miles/hr. and that impact winds through open windows may vary from 5 to 15 miles/hr. and frequently exceed these values, it is not difficult to understand why hoods located aside open windows are highly ineffective. Obviously the simple task of keeping the adjacent windows closed would eliminate this problem. Hoods adjacent to doors present a similar picture although air velocities through doorways are not as excessive as those through open windows. Hoods should not be located near and opposite open windows and doorways because the impact of any high velocities will extend into such hoods and cause displacement of hood

air. Hoods facing out from dead-end areas are the most suitable as far as location is concerned and are likened to a hood within a hood. Wall locations with no air interferences at the hood extremities and corner locations are also satisfactory. Hoods located in open areas of rooms are acceptable provided room air convection is low. It is important in considering hood location not to overlook problems of escape in case of fire.

TYPES OF HOODS

Hoods are used for various purposes and create problems in certain applications. This has led to the introduction of different types of hoods which, for this presentation, will be classified as: (1) chemical, (2) radioisotope, (3) low capacity, and (4) perchloric hoods.

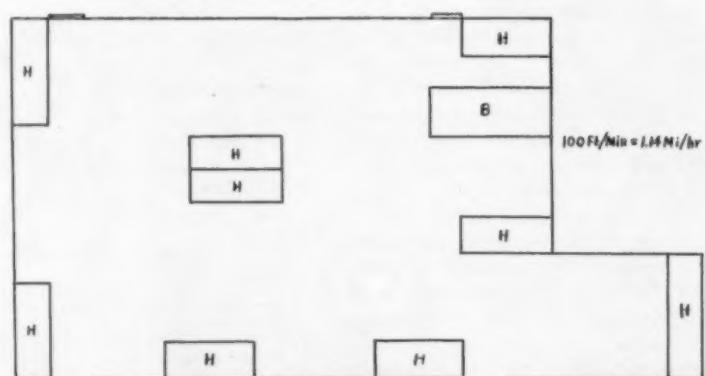
Chemical Hoods. These have been the main subject of discussion thus far and are shown in Figures 3 and 4.

Radioisotope Hoods. The high degree of toxicity and expense of radioisotopes places additional demands on laboratory hoods. These requirements are best mentioned by the following radioisotope hood specifications:

1. The face air velocity should be uniform and between 100 and 200 feet per minute (depending on location and activity) for all sash positions (constant velocity hood) and have a vector direction perpendicular to the plane of the face of the hood.
2. All facility controls should be located outside the hood.
3. The bench top should be capable of supporting a load of at least 500 pounds per square foot (for shielding).
4. The bench top should contain a removable tray with rounded edges to retain spills. This tray should have a drain-out leading into the hood drain system to facilitate washing.

Fig. 7

Hood Location



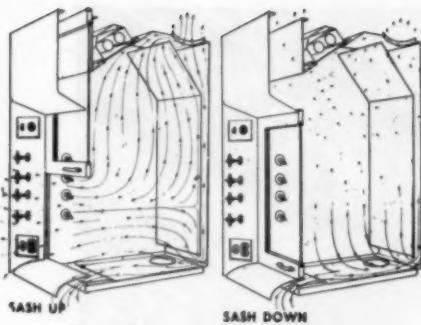


Fig. 8

5. Inside surfaces of the hood should be acid resistant and easy to decontaminate. When activity levels of materials used exceed microcurie amounts, strippable coatings on walls are desirable.

6. Vaporproof electric fixtures only should be used in these hoods.

7. Efficient filters (Type 6-CWS or AEC filters) should be installed in the system, near the hoods, to filter the exhaust air if highly contaminating materials are used.

Without constant face velocity for all sash positions, the loss of valuable materials would likely occur with the high velocity created by low sash positions with the conventional hood. Constant velocity may be obtained by means of numerous technics which proportion the amount of air passing through the hood face according to actual opening area. One of the simplest designs for constant velocity is presented in Figure 8 (courtesy, Keweenaw Mfg. Co., Adrian, Mich.).

All of the exhaust air enters the hood proper but its route of entry and proportioning depends on the sash position. The bleeder section may be considered as part of the hood face with the hood sash as a damper for

proportioning the air. A photograph is shown in Figure 9.

The location of all facility controls is outside the hood. An added feature of the hood shown is the presence of air foils (bell mouth) at the edges of the hood to eliminate vortices which commonly occur at the square edge of the conventional hood openings.

Another successful constant velocity hood is shown in Figure 10 (courtesy, A. B. Stanley Co., Chestnut Hill, Mass., and author). In this case the bleeder air by-passes the hood proper by going directly into the hood plenum. The hood sash performs the duties of a sliding damper which opens (sash down) or closes (sash up) a bleeder opening to the hood exhaust plenum so designed as to proportion the air exhausted by the hood slots in relation to the open face area.

The equation of the curve of the cut-out section is $x = sh/y^2$ where

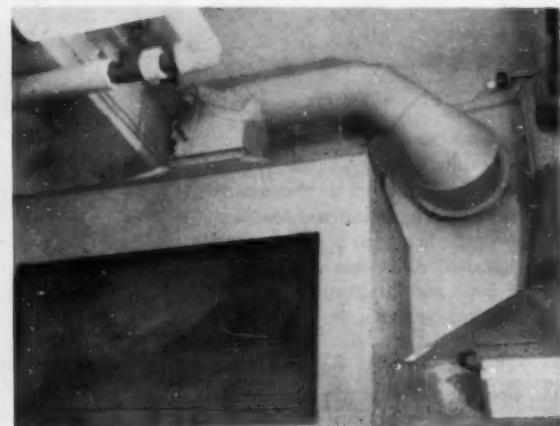
Fig. 9



Fig. 10



Fig. 11



x = horizontal distance, s = total fixed baffle slot area, h = minimum open face height with no bleeding, and y = face or sash height.

Since this type of constant velocity hood proportions the amount of air exhausted by the hood proper in relation to face opening area, small amounts of exhaust air and negligible turbulence will be encountered at low sash positions even under design conditions of high full face velocity.

The need for efficient filtering of hood effluents if highly toxic radioisotopes are used in these hoods introduces another problem. The types of filters recommended impose a widely variable resistance to air flow in such systems (1 to 5 inches head of water) depending upon the state of cleanliness of the filter. To extend the life of these filters and for good performance, an additional variable resistance in series with the filter is added to the system. This is usually in the form of a motorized damper which maintains a constant loss across both the filter and damper for a fixed capacity of the system (Fig. 11). Damper operation is controlled by a pilot tube attachment which meters the required quantity of air.

Low Capacity Hoods. Hoods in rooms requiring air conditioning, low or high temperatures, clean air or other unnatural air environments should not exhaust excessive quantities of air. This may be accomplished by restricting the actuatable face opening using sliding panels (Fig. 12 on page 46). The amount of hood space remains the same and is readily available at any section of the hood face.

The amount of air exhausted is determined by the actual face opening area and the required face velocity. The need for hoods exhausting small

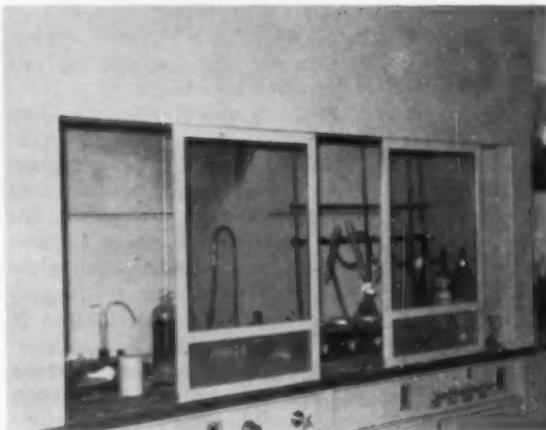


Fig. 12

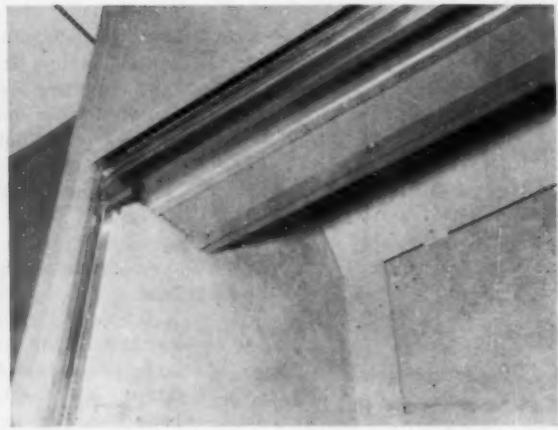


Fig. 14

amounts of air has led to the development of so-called pressurized hood. In these units, outside air is supplied directly to the inside of the hood, minimizing the amounts exhausted from the room (Fig. 13). (Courtesy, Metals Lab., Inc.). The supply grill of the hood shown is inside the top front of the hood face (Fig. 14).

The amount of air supplied to these grills should never exceed 40 to 70 per cent of that exhausted by the hood. These hoods should be checked frequently to assure proper balance. It is my present opinion that such hoods should never be used for work involving highly toxic materials.

Perchloric Acid Hoods. The increasing use of perchloric acid mixtures for digestion of organic materials has increased the incidence of exhaust duct fires. This substance when fairly concentrated and in the presence of organics may react so violently as to cause explosions and fires. Dilution with water renders this material harmless. If any significant amounts of this material are to be used where the material can become air borne, such as in the case of organic digestions, it should be done in special hoods. A typical perchloric acid hood is shown in Figure 15. The hood may be constructed of soapstone or Alberene to present a hard, smooth, nonreactive surface which can be easily washed. A water spray arrangement is located at the top on the inside of the plenum and functions whenever the hood fan is in operation. This installation also has a steam feed to wet down the inside surfaces of the exhaust duct, when it is in use. The steam, water spray, and lights automatically go on when the fan is put into operation. When the fan is shut down, the lights go out but the fan



Fig. 13.

continues to operate for a delayed period during which the steam load is increased from approximately 1 lb. to 6 to 8 lbs./minute more thoroughly

Fig. 15



to wash down any perchloric acid solutions in the duct. Following the delay the fan and steam both shut down automatically. This arrangement has apparently eliminated the problem of duct fires but still creates a rather serious duct corrosion problem.

Other perchloric acid hood systems use water sprays for duct washing, and some have been fortunate literally to get away with using water sprays in the hood plenum only. The latter should be inspected frequently and significant amounts of perchloric acid and organic materials should not be permitted to accumulate.

CONCLUSION

Certain general conclusions may be made concerning this discussion on hood design and application:

1. Laboratory hoods are important facilities and should be well designed to provide uniform air velocities perpendicular to the plane of the hood face opening.

2. For nonradioactive and some low-level radioactive substances, hood air entrainment by room air convection is the most important means of contaminant dispersion from hoods. For good hood locations, face air velocities of from 50 to 100 ft./min. are satisfactory for this type of control.

3. For highly toxic radioisotopes, contaminant dispersion by gas and vapor diffusion must also be considered in determining adequate hood face air velocities.

4. Hood location is a most important factor in hood performance.

ACKNOWLEDGMENT: I wish to acknowledge the valuable assistance of Janet Walkley, industrial hygiene chemist of the Massachusetts Institute of Technology Occupational Medical Service, for photographing many of the hoods shown.



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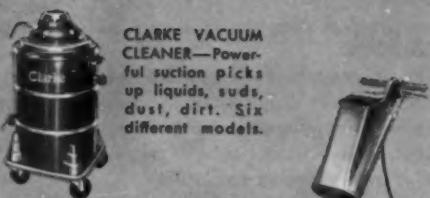
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NEWS

Censures Two Colleges . . . Memphis College Must Integrate . . . Ohio State Revamps Organization Chart . . . Year-Round Operation to Meet Large Enrollments at Massachusetts . . . W. T. Grant Starts Gift Matching Program

A.A.U.P. Votes to Censure Two Colleges

NEW YORK.—At its annual meeting here the American Association of University Professors voted to censure the administrations of the University of Nevada and Catawba College of Salisbury, N.C., for allegedly violating principles of academic freedom and tenure.

The censure charges against the two institutions for alleged improper dismissal of faculty members were recommended by the association's committee on academic freedom and tenure and were approved by more than 200 delegates attending the group's 43d annual meeting.

Frank Richardson, associate professor of biology at the University of Nevada, was dismissed by Dr. Minard W. Stout, university president, in 1954 over the question of his ability to head the biology department and his alleged dissatisfaction with the university administration.

The Catawba College case involved three professors dismissed by the board of trustees despite their right to "permanent or continuous tenure," according to an association resolution.

Court Rules Integration Now in Memphis College

WASHINGTON, D.C.—The Supreme Court has refused to review a lower court ruling that Tennessee has no right to limit admissions to state operated colleges on the basis of color or race. A decision of the sixth circuit court of appeals had ruled that Negroes must be admitted without delay to Memphis State College. That decision had nullified a Tennessee plan for gradual integration of teachers colleges and normal schools.

Five Negroes brought suit after they had been denied enrollment in the Memphis college, contending they

were entitled to admission under the Supreme Court's ruling in 1954. All five are residents of Memphis or the vicinity and have finished high school.

Tennessee's code provides that white persons over 16 years old who have completed four years of high school and are residents of the state should be admitted without tuition to teachers colleges and state normal schools. Nonresidents are admitted on payment of tuition.

The state had contended that too rapid integration at Memphis State College would deprive it of accreditation by the Southern Association of Colleges. A minimum expenditure of \$300 a pupil is required for accreditation. Admission of eligible Negroes, the state asserted, would bring this expenditure below the minimum.

In the first court action, a federal district judge at Memphis sustained a gradual plan of integration, but the court of appeals reversed the decision by a vote of 2 to 1. The Supreme Court upheld the ruling of this court.

Small Colleges Seek Funds for Pay Increases

WASHINGTON, D.C.—In mid-May the Council for the Advancement of Small Colleges began a three-year campaign to raise \$3 million to increase faculty salaries of the 60 member schools of the association.

These small colleges in 31 states have not met the requirements of regional accrediting boards because of inadequate libraries and equipment, as well as salaries. The 60 institutions belonging to the council are all four-year liberal arts colleges, according to Alfred T. Hill, executive secretary.

These institutions can be brought up to top standards for the rapidly increasing numbers of persons seeking college admission at much less than it would cost to build new colleges, Dr. Hill asserts.

Ohio State Reorganizes Administrative Setup

COLUMBUS, OHIO.—Reorganization of the administrative setup at Ohio State University in line with recommendations of President Novice G. Fawcett was approved last month by the board of trustees.

A chart of reorganization, to become effective not later than September 1, provides for six top administrative officers, who will in the future compose the cabinet of the new president.

These positions include, with some enlargement of responsibilities, three already in existence, namely, vice president, business and finance; vice president, instruction and research, and director, university plant studies. New positions are: director, university relations; executive dean, student relations, and executive dean, special services.

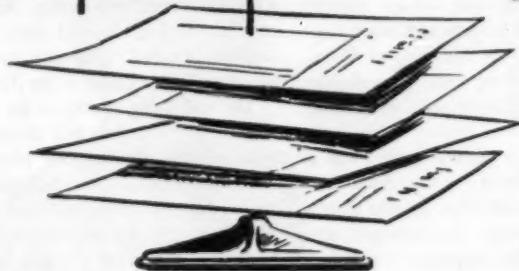
It may take several months to put the plan in operation as far as personnel is concerned, President Fawcett declared. Some reassignment of present campus personnel as well as new appointments are involved.

W. T. Grant Starts Gift Matching Program

NEW YORK.—W. T. Grant Company will match employees' contributions to colleges and universities. Employees need not have attended the college to which their contribution is made.

Edward Staley, president of the national retail chain, said that the company had been considering plans for aid to higher education for some time. Because the company operates stores in 42 states, a fair method of selecting deserving colleges was a major problem. He feels that the gift matching program solves this problem and will encourage gift giving by employees.

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Speaker Says State Colleges Must Have More State, Federal Aid

NEW YORK.—"If the most powerful and richest nation in the world cannot guarantee its motivated youth the opportunity of education to the limit of their ability, then the future of this nation seems very dim indeed," said Franklin D. Murphy, chancellor of the University of Kansas and past president of the State University Association, in a speech before the heads of member institutions of the American Association of Land-Grant Colleges and State Universities and of the State University Association.

Public institutions of higher education will be overwhelmed in 10 years by rising costs and enrollments, Dr. Murphy said. The only way this can be avoided is by the institutions receiving proportional increases in state and federal grants and contributions from private sources.

In the next decade state universities and land-grant colleges must expand to accept a 100 per cent increase in enrollment and must increase faculty salaries 100 per cent to meet population increases on the one hand and maintain educational standards on the other, Dr. Murphy declared. These institutions are also facing the need for additional funds to replace outmoded equipment and for new construction, he said. The alternatives, he stated, are increased tuitions (already in effect in some institutions), limited admissions, and other restrictions that would defeat the original purpose and reason for existence of the public colleges.

Court Voids Girard College Ban on Negroes

WASHINGTON, D.C.—In a recent decision the U.S. Supreme Court ruled that an 1848 restriction preventing Negroes from attending Girard College in Philadelphia is in violation of the provisions of the Fourteenth Amendment and constitutes state discrimination. The court cited the public school segregation decision of May 1954 as the basis for its ruling on the Girard College case.

The verdict reversed a judgment of the Pennsylvania supreme court, which held that the Girard case did not come within the federal high court's segregation ruling and that the amendment was not applicable.

Stephen Girard, a merchant and philanthropist who died in 1831, left

\$6 million to be used to establish a school for "poor, white, male orphans" and named the city of Philadelphia trustee. Since 1869, by an act of the Pennsylvania legislature, the Girard trust has been administered and the school operated by the board of directors of city trusts of Philadelphia.

In February 1954, William A. Foust and Robert Felder, Negroes, applied for admission. Their applications were refused on the grounds that they were not eligible under the Girard will.

The U.S. Supreme Court stated: "The board which operates Girard College is an agency of the state of Pennsylvania. Therefore, even though the board was acting as trustee, its refusal to admit Foust and Felder to the college because they were Negroes was a discrimination by the state. Such discrimination is forbidden by the Fourteenth Amendment. Accordingly, the judgment of the supreme court of Pennsylvania is reversed, and the case is remanded for further proceedings not inconsistent with this opinion."

Pomona College Increases Tuition

CLAREMONT, CALIF.—An increase of \$100 a year in tuition charges at Pomona College will bring the total tuition charge to \$900 a year. This includes the health service and season tickets for the artist course and athletic events. The new rate will be effective for the 1957-58 year.

President E. Wilson Lyon also announced that board and room charges, now \$750 a year, will go up to \$775.

The college's budget for 1957-58 calls for an educational operation cost of \$1734 a student, he said. This is exclusive of scholarships and dormitory and dining hall charges.

University to Operate on Year-Round Basis

AMHERST, MASS.—The University of Massachusetts will begin operating on a year-round basis in August 1958 to help meet overflow enrollments, President Jean Paul Mather said in a recent announcement.

"It's my position that we can't keep going to the legislature and asking for new multimillion dollar buildings and then let them lie idle for three months of the year," Dr. Mather declared. He calls the present system of nine months' operation and three months' vacation a "hand-me-down from the days when we had an agrarian economy."

Education Hurt by False Statistics, Says N.E.A. in Citing Cases

WASHINGTON, D.C.—False or misinterpreted statistics on American education are causing irreparable damage by creating distorted images in the public mind, according to T. M. Stinnett, executive secretary of the National Commission on Teacher Education and Professional Standards of the N.E.A. Dr. Stinnett compiled a list of widely quoted erroneous statements and supplied the actual facts in *Educational Record*, quarterly journal of the American Council on Education.

The following examples are cited:

Error: Fewer than half of our public high schools are offering physics and chemistry. *Actual facts:* Schools enrolling 94 per cent of high school students offer both physics and chemistry; one student in five takes physics; the number taking chemistry has increased twentyfold in the last 60 years, and two-thirds take algebra.

Error: One-third of the states will certificate high school teachers of mathematics without any college preparation in mathematics. *The fact:* Not a single state is without requirements of college preparation in mathematics for high school math teachers.

Error: To supply our need for elementary and secondary school teachers in the next decade will require one-half or more of our college graduates. *The facts:* 21 states and territories still are certifying beginning elementary teachers below the degree level. In some states as high as one-half of the new teachers each fall are recruited from college graduates of former years who have married, gone into the armed forces, or pursued other occupations.

Error: Only 189 students qualified to teach physics graduated from American colleges and universities in 1956. *The fact:* Many times that number were included under the heading "General Science" in the same set of statistics; there were 2121 graduates in that category in 1956.

Error: Nearly two-fifths of those who have prepared for high school teaching do not become teachers. *The fact:* The quoted statistics refer to those who took teaching positions in the same year as graduation from college; many return after military service, attendance at graduate school, or marriage; only one-sixth of a typical graduating group is known to have taken jobs in nonteaching fields.

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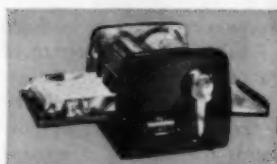
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SEE THE CONQUERORS AT ALL THE MAJOR SCHOOL CONVENTIONS

Year-Round Medical Coverage at Cornell

ITHACA, N.Y.—Cornell students will be eligible for year-round and out-of-Ithaca medical coverage under a voluntary group health insurance plan effective September 1.

Students who sign up for the new plan will also receive additional benefits in the university infirmary, beyond those covered by the compulsory university health service fee.

The cost will be \$17.75 for 12 month coverage, \$12.50 for the nine-

month school year, \$5 for the six-week summer session, or \$12.75 for the second semester and summer.

The new plan will provide 30 days' room and board in any hospital except the university infirmary, plus 80 per cent of nurse service and \$100 miscellaneous hospital expenses; limited doctors' visits at home or in a hospital, and a \$500 blanket accident coverage.

A provision for catastrophic illness guarantees 80 per cent of expenses up to \$2500, after the first \$500 expense, and 100 per cent of expenses between \$2500 and \$5000.

The university health service provides unlimited clinic visits and 14 day hospitalization in the university infirmary. The new insurance plan will supplement this, covering infirmary expenses for an additional 30 days, \$50 for miscellaneous expenses and elective surgery.

Says Michigan Needs More Junior Colleges

ANN ARBOR, MICH.—In view of its population and economic resources, Michigan is not doing so well in providing for higher education, the director of the Legislative Study Commission on Higher Education reported at a recent meeting.

Dr. John D. Russell suggested an increase in the number, size and quality of junior colleges as one means of meeting the demand.

The physical plants of the state's community colleges are generally inadequate, Dr. Russell said. "These colleges spend about \$450 a year per student on the average for education and general purposes. This is probably not enough."

Specifically, Dr. Russell proposed:

1. The state should work to get all publicly controlled institutions accredited by the North Central Association.
2. Community colleges should strengthen their programs in occupational fields.
3. Community college laws should be amended to allow formation of community college districts encompassing two or more adjoining school districts.
4. Community colleges should be allowed to build dormitories on a self-financing basis.

5. Supervision, direction and coordination of community colleges should be strengthened by appointment of a full-time director in the department of public instruction, a citizens advisory committee, and a community college coordination council.

Other recommendations he outlined were: (1) that a uniform pattern of enrollment reports for colleges be developed; (2) that further study be given the "confused pattern" of governing boards for publicly controlled institutions, and (3) in the event of a revision of the state constitution, thought be given to the removal of the superintendent of public instruction as a voting member of any board that controls higher education and that nonvoting members on all institutional boards be eliminated.

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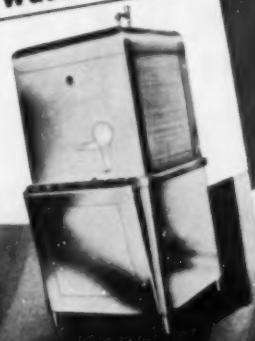


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Veteran-Trainees Set New Record

WASHINGTON, D.C.—The Korean G.I. bill has set another new record, with more veteran-trainees in the spring quarter than ever before in its five-year history, Veterans Administration announced recently.

Spring enrollments totaled more than 764,000 veterans. More than half of these attended colleges and universities. The remainder are enrolled in other schools below the college level, on-the-job training, and on-the-farm training. The Korean program will continue until 1965.

Counsel Students on Religion and Love

ANN ARBOR, MICH.—Religion, love and marriage are the three main problems college students bring to their chaplains, according to a report by Robert Bonthius, Vassar College chaplain, given at the 10th annual conference of the National Association of College and University Chaplains. Findings were based on a survey of 50 college chaplains, about one-fifth of all those serving in this capacity.

NAMES IN THE NEWS

William L. Swartzbaugh, program director of the Ohio Union Building at Ohio State University, Columbus, has been named director of the new student union at the University of Pittsburgh. He takes over his new duties in July.

Dr. John T. Rettaliata, president of Illinois Institute of Technology, Chicago, has been named chairman of the board of visitors for the Air University at Maxwell Air Force Base in Alabama. Membership on the board is at the invitation of Gen. Nathan F. Twining, chief of staff. Board members evaluate curriculums, management and facilities of the air force system of professional education.

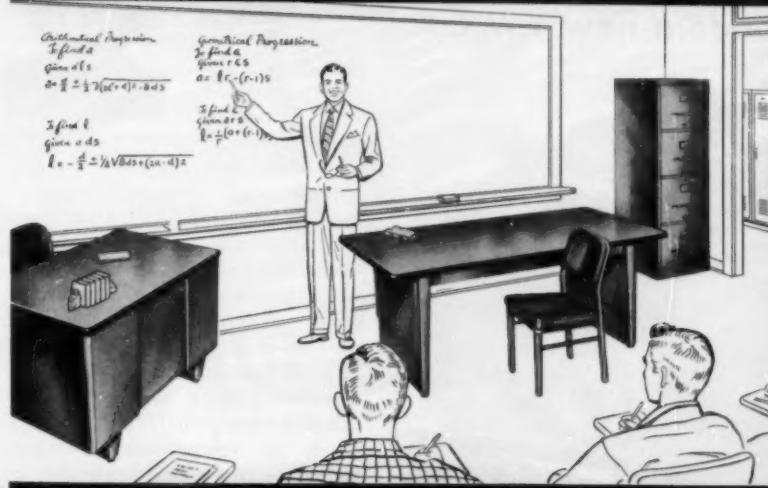
Dr. T. Keith Glennan, president of Case Institute of Technology, Cleveland, has been elected chairman of the Institute for Defense Analysis, succeeding Dr. James R. Killian Jr., president of M.I.T. The Institute is an association of universities formed to promote a more effective relationship between national security and scientific learning, especially in the field of defense studies.

Stanley B. Langrand has been appointed an assistant controller at the

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University of Chicago, John L. Kirkpatrick, controller, announces. Mr. Langrand served with the controller's office of the university from 1947 to 1952, and rejoined the office in March 1954, his primary responsibility being the government accounts section. He had three years of active service in the air force during World War II. Arthur Lincicome also holds the title of assistant controller at the university.

Dr. John M. Yarborough, director of Stanford residences and of Stanford Village, Palo Alto, Calif., is president of the newly formed California Association of College and University Housing Officers, which convened recently on the Stanford campus. **H. Don Watts**, director of residences at California State Polytechnic College, San Luis Obispo, is vice president, and **Christine Ricker**, director of Stanford University dining halls, secretary.

Dr. D. Lincoln Harter, assistant professor of political science, Wharton School of Finance and Commerce, University of Pennsylvania, has been named special assistant to the University of Buffalo's vice chancellor for planning and development and director of the office of information services. From June 1 to September 15, Dr. Harter will serve as assistant to Dr. Richard H. Heindel, vice chancellor for planning and development, and on September 15 he will succeed Dr. Harold Seymour as director of information services. Dr. Seymour has resigned to become professor of history at Finch College, New York City.

Robert W. Hoefer, University of Cincinnati controller, has been elected president of the Ohio Association of College and University Business Officers for 1957-58. During the past year, he has been vice president of this 46 member institution group. Mr. Hoefer also was recently honored with the vice presidency of the Central Association of College and University Business Officers and with a Carnegie Corporation scholarship grant for the eighth annual Workshop for College Business Management at the University of Omaha.

Thomas K. Worcester, director of publicity and publications, Pueblo Junior College, Pueblo, Colo., since 1954, has been appointed director of public information at Colorado College, Colo-



John M. Yarborough

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rado Springs. He will assume the post this summer, succeeding Thomas A. Pankau, who resigned to enter business.



William C. Stitt

William C. Stitt, assistant manager of the bookstore in the Michigan State University Union Building for the last five years, has been appointed

manager of the bookstore in the University Center which Miami University, Oxford, Ohio, will open soon.

Ralph J. Gunden, controller at Goshen College, Goshen, Ind., has become business manager. The office of controller



Ralph J. Gunden



Leland A. Bachman

former business manager, is now coordinator of public relations.

Dr. Herman B. Wells, president of Indiana University, was recently elected to the board of directors of the Educational Television and Radio Center with headquarters at Ann Arbor, Mich., for a five-year term. The center, supported by the Ford Foundation, provides a national program service for its affiliates, the 23 noncommercial educational TV stations.

Harry E. Wood, acting director of purchases at Rutgers, the State University of New Jersey, New Brunswick, has been named director of purchases. Mr. Wood has been a member of the Rutgers staff since 1946. Recently, he was appointed a director of the Educational and Institutional Cooperative Service, Inc., an affiliate of the National Association of Educational Buyers.

S. Laws Parks, business manager-treasurer of Union College, Barbourville, Ky., recently resigned to accept appointment as business manager of Scarritt College, Nashville, Tenn. Mr. Parks takes office June 15.

E. W. Martin, treasurer of Hendrix College, Conway, Ark., has been elected a member of the American Institute of Accountants, national professional society of certified public accountants.

Fred E. O'Connell, supervising accountant at Cornell University since 1951, will become university auditor on July 1. He will succeed J. B. Trousdale, who has been named assistant controller for accounting. Mr. Trousdale has been with the university since 1926.

Robert Gale, editor-in-chief of the Maco Magazine Corporation, New York City, has been appointed vice president in charge of public relations and development for Carleton College, Northfield, Minn. Mr. Gale was president of the New York Carleton Alumni Association for two years, and also served as a member of the special gifts committee; he is currently on the Carleton College Council.

Dr. William G. Van Note, president of Clarkson College of Technology, Potsdam, N.Y., has been named chairman of the Commission on Non-Tax Supported Colleges and Universities of the Association of Colleges and Universities of New York State. The association includes state and municipally

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C. Russell DeBurlo Jr. is the new controller and business officer of Tufts University, Medford, Mass., succeeding **Raymond Magrath**, who resigned recently to accept a similar post at Springfield College, Springfield, Mass. Mr. DeBurlo went to Tufts University as budget officer in 1949, became assistant to the president for college operations in 1953, and later was made assistant controller and business officer.



C. R. DeBurlo Jr.

Elsie T. dePonte, director of food service at DePauw University, Greencastle, Ind., has been promoted to the position of director of residence halls and food service. She succeeds **Martha Cleavelin**, who resigned in February because of illness. Mrs. dePonte first joined the DePauw staff in 1943 as university dietitian and became director of food service in 1952. She is a member of the editorial advisory board of **COLLEGE AND UNIVERSITY BUSINESS**.

Percy Uris, builder of many New York City's business structures, has been appointed by **Grayson Kirk**, president of Columbia University, as executive assistant to the president for new construction. An alumnus of Columbia University, Mr. Uris will serve without compensation, working with architects and supervising programs of construction.

Dr. Howard W. Johnson, program officer with Governmental Affairs Institute in Washington, D.C., has been made president of Anatolia College in Salonika, Greece. He will succeed **Carl Compton** upon his retirement. Dr. Johnson helped found and develop the Free University of Berlin in 1949-50 and has served in the Bureau of German Affairs in the Department of State.

William M. Posey, assistant to the president of Lake Erie College, Painesville, Ohio, has been appointed director of public relations at Wells College, Aurora, N.Y. His duties at Wells will include those formerly handled by both the directors of public relations and of development.

Walter Jahn, a certified public accountant, on July 1 will become auditor of Creighton University, Omaha, Neb. He will succeed **Dr. Joseph Soshnik**, who has been appointed controller of the University of Nebraska.

(Continued on Page 64)



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College and University Personnel Association

President: James N. Ewart, California Institute of Technology; secretary-treasurer: Sheldon F. King, Carnegie Institute of Technology; executive secretary: Donald E. Dickason, University of Illinois. Permanent head-

quarters, 809 S. Wright St., Champaign, Ill.; Kathryn Hansen, editor, C.U.P.A. Journal.

Convention: Aug. 4-7, University of Colorado, Boulder.

National Federation of College and University Business Officers Associations

President: Nelson A. Wahlstrom; University of Washington; vice president: Thomas E. Blackwell, Washington University, St. Louis; secretary-treasurer: C. H. Wheeler III, University of Richmond.

Associations of College and University Business Officers

American Association

President: William M. Jones, North Carolina College; secretary: B. A. Little, Southern University.

Convention: April 24-26, Willard Hotel, Washington, D.C.

Central Association

President: Parker Hall, University of Chicago; University of Oklahoma; secretary-treasurer: Ralph Olmsted, Evansville College, Evansville, Ind.

Eastern Association

President: John Schlegel, Lafayette College; secretary-treasurer: Kurt M. Hertzfeld, University of Rochester.

Southern Association

President: Claude M. Reaves, Huntingdon College; secretary: C. O. Emmerich, Emory University.

Western Association

President: Kenneth A. Dick, University of Idaho; secretary: Robert B. Gilmore, California Institute of Technology.

Canadian Association of University Business Officers

President: B. F. Macaulay, University of New Brunswick; secretary-treasurer: F. J. Turner, Carleton College.

American College Public Relations Association

President: Lynn Poole, Johns Hopkins University; executive secretary: W. Noel Johnson, 1785 Massachusetts Ave., Washington, D.C.

Convention: June 24-27, Hotel Fontenelle, Omaha, Neb.

Association of College Unions

President: George Donovan, Pennsylvania State University; secretary-treasurer: Edgar A. Whiting, Cornell University; editor of publication: Porter Butts, University of Wisconsin.

National Association of College Stores

President: Ray Vanderhoef, Iowa Supply Co., Iowa City, Iowa; general manager: Russell Reynolds, Box 58, 33 West College Street, Oberlin, Ohio.

National Association of Physical Plant Administrators of Universities and Colleges

President: A. F. Gallistel, University of Wisconsin; secretary-treasurer: A. F. Gallistel, University of Wisconsin.

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"Little things affect people's
attitude toward you"

(Continued From Page 60)

Dr. Hugh Borton, professor of Japanese and director of the East Asian Institute at Columbia University, has been named president of Haverford College, Haverford, Pa. On June 15 he succeeds Dr. Gilbert F. White, who resigned the presidency and returned to teaching in January 1956. He is now chairman of the department of geography at the University of Chicago. Archibald MacIntosh, vice president of Haverford, has been acting president.

Dr. Wesley N. Haines, assistant to the president of Keuka College, Keuka Park, N.Y., will be the new director of development at Bucknell University, Lewisburg, Pa. He will succeed Dr. Dayton L. Ranck, who retires June 30 after serving as an administrative official there for 33 years.

Clair L. Taylor, superintendent of public instruction for the state of Michigan since July 1953, will become director of the summer school and the evening college at Michigan State University on July 1.

Dr. James M. Hester, a member of an advertising research firm, has been named provost of Long Island University's Brooklyn Center. He will direct the educational and administrative operations of the college of liberal arts and science, the college of business administration, and the graduate school.

Dr. James E. Russell, associate professor of education at Teachers College, Columbia University, was recently appointed secretary of the Educational Policies Commission of the National Education Association. Dr. Russell takes over his new duties on July 1, succeeding Dr. Howard E. Wilson, who resigned to become dean of the school of education at the University of California, Los Angeles.

Sister Vincent Therese, for the last 16 years head of the education department of St. Joseph's College for Women, Brooklyn, N.Y., has been named president of the college. She will be the third president graduated from St. Joseph's, which was founded in 1916.

Dr. Ernest C. Colwell, former president of the University of Chicago, has been named president-elect of Southern California School of Theology, Claremont. Dr. Colwell will assume his new duties early in October upon his return from a series of speaking engagements in England in September.

Dr. A. Leland Forrest, 44, chancellor of Nebraska Wesleyan University, Lincoln, died last month. He had undergone surgery the latter part of April.

CLASSIFIED ADVERTISING

POSITIONS WANTED

Assistant Business Officer—36 year old college graduate in business administration with seven years experience in college business management desires position in liberal arts college with opportunity for advancement to senior business officer. Write Box CW 348, COLLEGE AND UNIVERSITY BUSINESS.

Bookstore Manager-Purchasing Agent—45 years old, college graduate, several years experience; also experience with university printing and public relations department. Write CW 311 COLLEGE AND UNIVERSITY BUSINESS.

Bursar-Accountant—Full control; experience, competent; highest references; now on Pacific coast but will consider position middle Atlantic or southern states. Write Box CW 345, COLLEGE AND UNIVERSITY BUSINESS.

Business Officer-College Administrator Instructor—Ten years business officer and administrative assistant to the president; public school administrator; available soon; anywhere. Write Box CW 344, COLLEGE AND UNIVERSITY BUSINESS.

Business Officer—Broad experience business management; State and Protestant supported institutions; desire situation challenging ability develop better business management. Write Box CW 334, COLLEGE AND UNIVERSITY BUSINESS.

Controller — Business Manager — Treasurer—Successful college treasurer and business manager fourteen years, college teaching in business administration five years, experienced in accounting, budget preparation and control, financial reporting, purchasing and plant maintenance; have understanding and imagination; presently employed in college; desire change. Write Box CW 314, COLLEGE AND UNIVERSITY BUSINESS.

Dietitian—A.D.A. member; age 33; northwest preferred; desires position as foods director; 7 years experience, college residence halls. Write Box CW 332, COLLEGE AND UNIVERSITY BUSINESS.

Food Administrator—Chief Dietitian—B.S.; graduate work at Cornell and Columbia summer schools; excellent qualifications and experience; desires position large resident secondary school or small college (1900) for either July 1 or September 1; prefers school to have summer school or summer activities; location south New York City to Key West not more than 100 to 175 miles inland, full maintenance; full resume upon request. Write Box CW 347, COLLEGE AND UNIVERSITY BUSINESS.

Food Service Director—Personable, enthusiastic; knowledge of menu planning, purchasing food and equipment, labor and food cost controls, budgeting, personnel development; desire relocate California or southwest. Write Box CW 349, COLLEGE AND UNIVERSITY BUSINESS.

Food Service Director—Experienced university food service director desires position; Cornellian; age 37. Write Box CW 350, COLLEGE AND UNIVERSITY BUSINESS.

Superintendent of Buildings and Grounds—Married man with two children; 13 years experience in field of construction, maintenance and property management; personnel record good; accustomed to supervising other workers; desire position with college or university in midwest; personal interview requested. Write Box CW 346, COLLEGE AND UNIVERSITY BUSINESS.

The rates for classified advertisements are: 20 cents a word; minimum charge, \$4. (No charge for "key" number.)

Forms close 25th of month preceding date of issue.

COLLEGE AND UNIVERSITY BUSINESS
919 N. Michigan Avenue, Chicago 11, Ill.

Superintendent of Buildings and Grounds—Engineering and legally trained; twelve years experience as superintendent of buildings and grounds at one of nation's outstanding colleges; experienced in budget preparation, purchasing, personnel management and all phases of plant maintenance; complete resume upon request. Write Box CW 336, COLLEGE AND UNIVERSITY BUSINESS.

POSITIONS OPEN

Chief Accountant—Large, growing eastern seaboard college; thorough familiarity with institutional accounting prime requisite; administrative staff status. Send resume and salary requirements to Box CO 236, COLLEGE AND UNIVERSITY BUSINESS.

Bookstore Manager—Man or woman; large eastern co-ed teachers college, \$200,000 volume; send late photo and complete details, age, education, experience. Write Box CO 228, COLLEGE AND UNIVERSITY BUSINESS.

Buildings and Grounds Superintendent—Position available September; full responsibility when present superintendent retires June 1958; mechanical background and previous college experience preferred; salary open. Send full details to Business Manager, GRINNELL COLLEGE, Grinnell, Iowa.

Chief, Plant Operations—Man, preferably between 35 and 45, for position in leading college in New York State; broad administrative responsibility; experience necessary in all phases of plant operation, maintenance and alterations, supervision of custodial services. Send complete resume of background and experience to Box CO 225, COLLEGE AND UNIVERSITY BUSINESS.

Comptroller—To be in charge of business office beginning between July 1 and September 1, 1967; salary open; send inquiries to President, MISSISSIPPI STATE COLLEGE FOR WOMEN, Columbus, Mississippi.

Director of Food Services—Major university northeastern United States; exceptional salary and challenge; individual must be employed currently as head of successful university feeding operation and be knowledgeable about student and faculty relations. Write Box CO 227, COLLEGE AND UNIVERSITY BUSINESS.

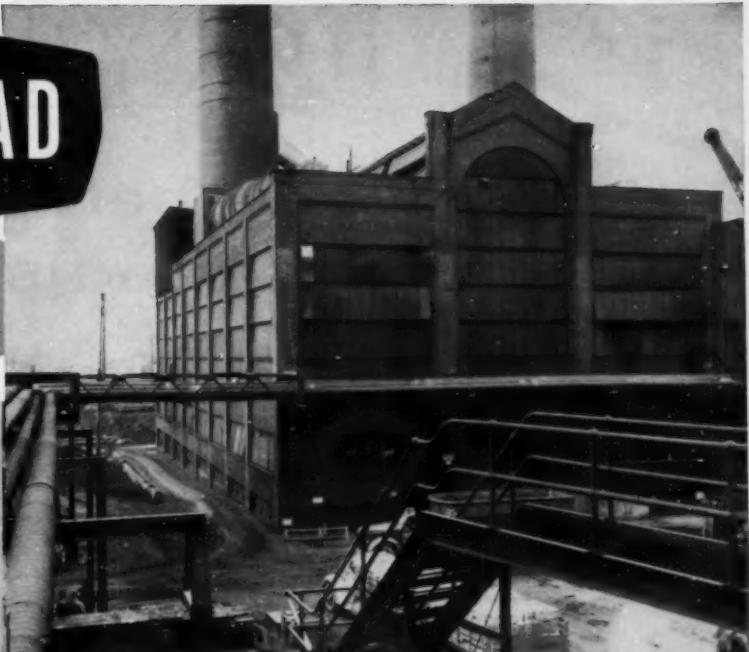
Food Service Director—College graduate; at least 5 years experience in food management, either commercial restaurant or institution; prefer man 28 to 40 year age bracket; permanent position with a growing concern; location in Pennsylvania; state salary expected. Write Box CO 221, COLLEGE AND UNIVERSITY BUSINESS.

Food Service Directors—Rapid growth of the leading quality minded college food service catering company creates a need for successful, young, male college or university food service directors; highest initial remuneration, plus rapid advancement in return for long hours of loyal work; character and personality traits more important than length of experience; relocate with consideration given to preference. Send resume to Box CO 211, COLLEGE AND UNIVERSITY BUSINESS.

Manager Student Houses—Dietitian with 8-10 years experience to take complete charge of food administration and housekeeping for 400 men college students; attractive salary; 5-day, 40-hour week; live out; benefits including one month vacation; position open now. Contact J. N. Ewart, Director of Personnel, CALIFORNIA INSTITUTE OF TECHNOLOGY, 1301 E. Colorado Street, Pasadena, California.

OVERHEAD

OR
underground



Ric-wiL offers the COMPLETE quality line of prefabricated piping systems

Ric-wiL factory prefabricated piping systems, *timed* to your schedule and *shipped* directly to the job site, can save you valuable time and money. Insulated units are available for steam, hot water, oil, other viscous fluids, process liquids and refrigeration lines . . . and remember . . . Ric-wiL is the quality system of exceptionally high mechanical strength and thermal efficiency.



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PREFABRICATED INSULATED PIPING SYSTEMS

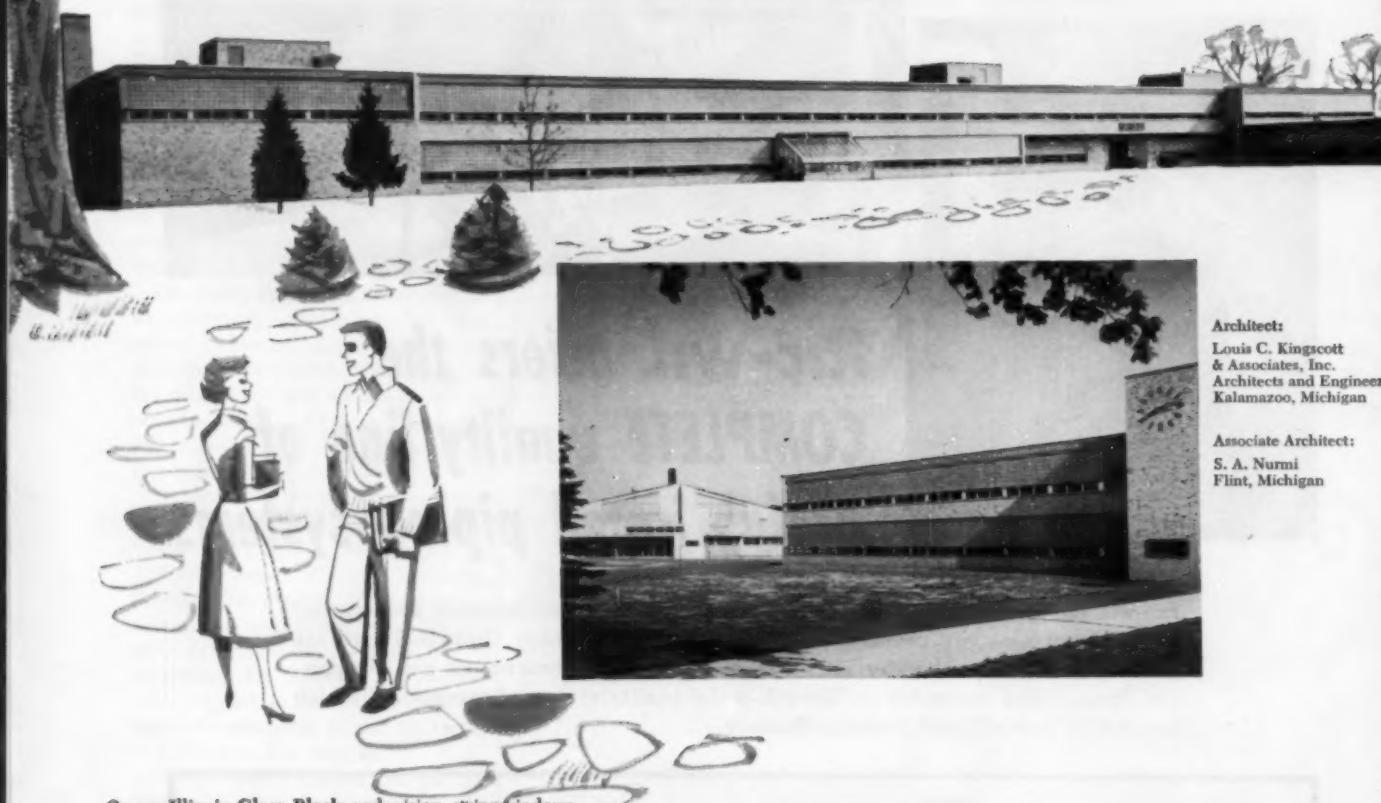
BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED

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Catalog . . .

DAYLIGHT

the way to better learning
with Owens-Illinois Glass Block



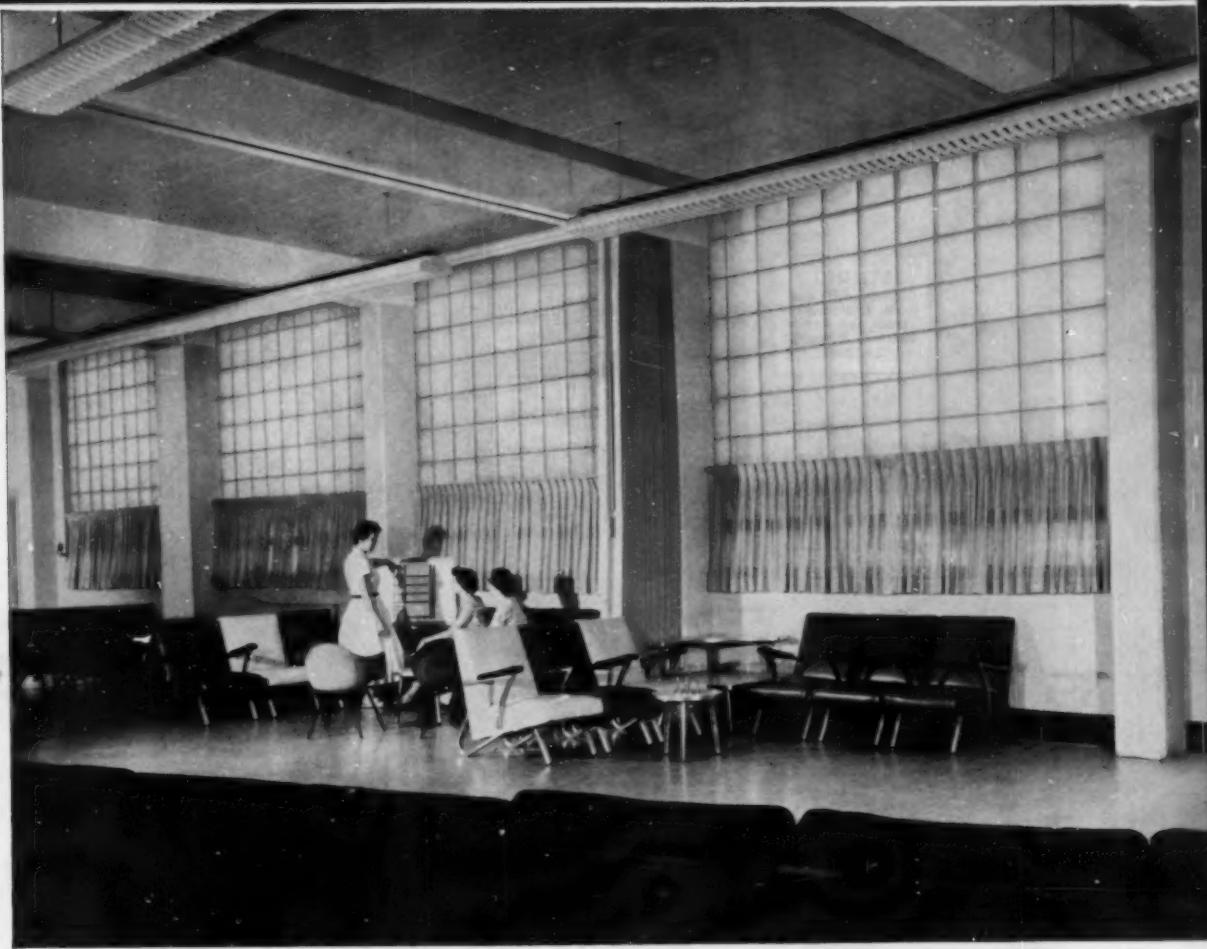
Architect:
Louis C. Kingscott
& Associates, Inc.
Architects and Engineers
Kalamazoo, Michigan

Associate Architect:
S. A. Nurmi
Flint, Michigan

Owens-Illinois Glass Block and vision strip windows
handsomely complement the sleek, modern design of
the Flint Junior College buildings.

Glass block provide sufficient daylight in classrooms
during normal days without need for costly artificial
lighting. Heating costs are reduced because glass block
insulate so effectively.





A curtain wall of Owens-Illinois Glass Block floods the lobby of the Flint, Michigan, Junior College with diffused daylight, free of glare and harsh contrasts.

Today's truly modern schools are making more and better use of free daylight with Owens-Illinois Glass Block

The huge expanse of glass block in Flint Junior College's beautiful field house assures maximum daylighting of the interior throughout the day.



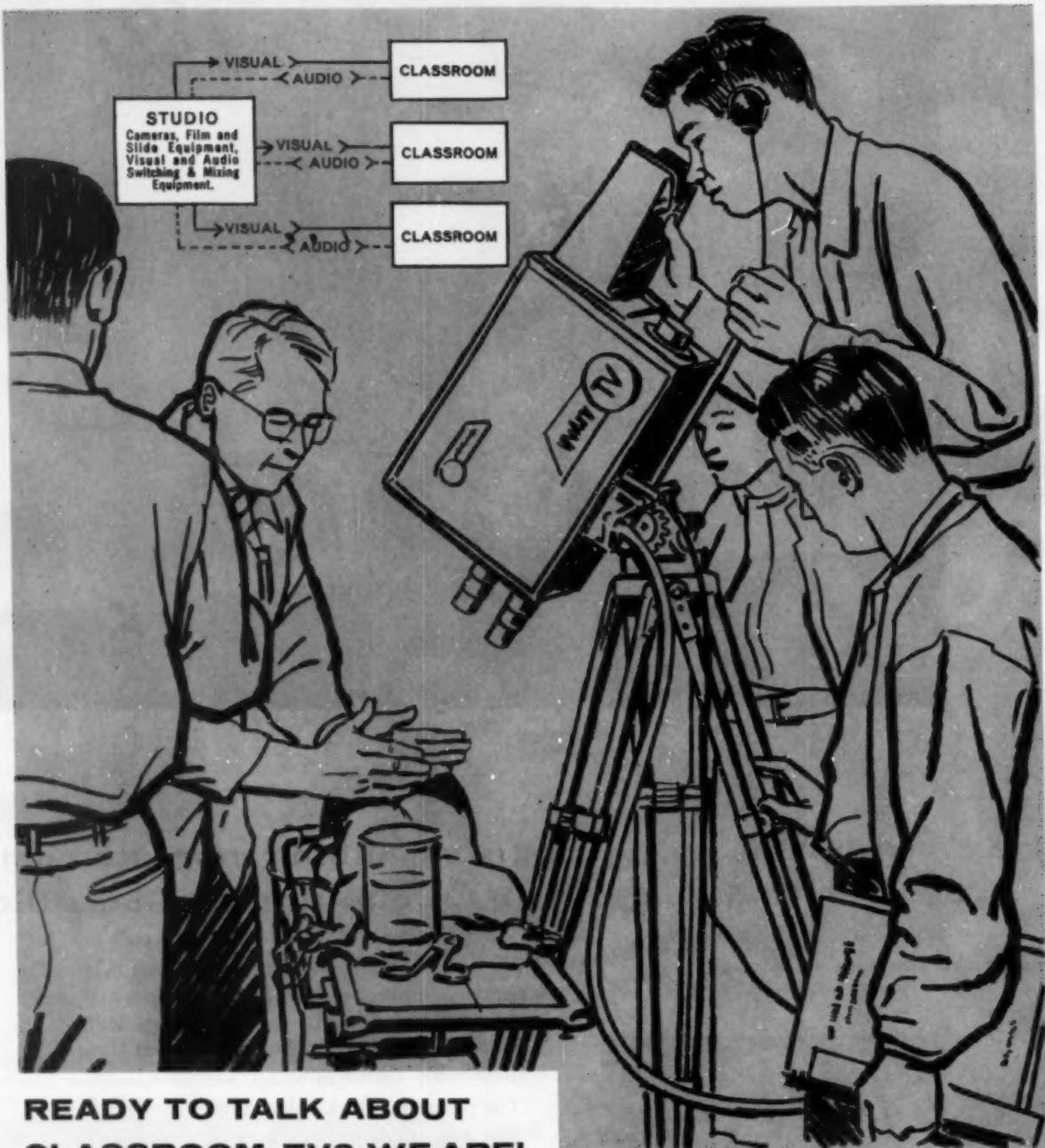
Lighting research has conclusively proved that steady, even daylighting, free from harsh contrasts and glare, creates an ideal seeing environment for students. Owens-Illinois Glass Block precisely meet these requirements. Here's how:

The prisms inside the block direct daylight upward, diffuse and spread it evenly over all areas of a classroom throughout the day. Disturbing glare is eliminated. Costly, old-fashioned window shades are not needed. Heating and lighting costs are greatly reduced because glass block insulate and daylight so efficiently.

Your present school, or one you are planning, can have the same good daylighting with Owens-Illinois Glass Block. Write for details now. Kimble Glass Company, subsidiary of Owens-Illinois, Dept. CU-6, Box 1035, Toledo 1, Ohio.

OWENS-ILLINOIS GLASS BLOCK
AN  PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO



READY TO TALK ABOUT CLASSROOM TV? WE ARE!

● We can cite examples of installations in schools like Miami University, at Oxford, Ohio; Fisk University, Nashville, Tennessee; University of Florida, at Gainesville; U. of North Dakota, Grand Forks, N. D., and Toledo University, at Toledo, Ohio. There are other educational institutions using miscellaneous equipment, such as camera chains and film chains, however; these are some examples of complete package installations where Educational TV is being used successfully.

Sarkes Tarzian, Inc. is a pioneer in the field of ETV systems. Since 1949, we have been designing and manufacturing broadcast equipment, and are one of the few manufacturers now offering a complete line of broadcast and closed circuit television equipment.

Always, we have stressed simplicity and reliability of operation . . . ease of maintenance . . . low initial cost, as well as low operating cost. And, speaking of cost, an adequate system—engineered to your own specific needs—is available for as little as \$12,000. This includes ALL basic equipment and it is approved for government use.

May we submit a proposal on LOW COST Educational TV to meet YOUR requirements? Or, write for "EDUCATION BY TELEVISION," a pamphlet prepared by Tarzian engineers.

SARKES TARZIAN, INC.
Broadcast Equipment Division, Dept. ETV
Bloomington, Indiana

WHAT'S NEW

June 1957

Edited by Bessie Covert

TO HELP you get more information quickly on the new products described in this section, we have provided the postage paid card opposite page 96. Circle the key numbers on the card which correspond with the numbers at the close of each descriptive item in which you are interested. COLLEGE and UNIVERSITY BUSINESS will send your requests to the manufacturers. If you wish other product information, just write us and we shall make every effort to supply it.

Shower Bath Dispenser for Spray-Bath Liquid

Spray-Bath Liquid is dispensed in the shower at the touch of a finger tip, with



the Huntington Spray-Bath machine. Designed for use in shower bath installations, the machine is easily installed in any shower room and delivers a jet of thorough-cleansing Spray-Bath Liquid, saving the problem of cakes of soap. The Spray-Bath installation includes motor, compressor, tank and self-timing valves. Spray-Bath Liquid gives a rich lather, will not irritate tender skin, rinses off easily and leaves no sticky film. Huntington Laboratories, Huntington, Ind.

For more details circle #847 on mailing card.

Spray and Liquid Insecticides for Institutional Use

Two new insecticides have been developed for institutional use. Available in spray and liquid form, Johnson's Raid Bug Killer and Raid Insect Spray contain a higher concentration of synergized pyrethrins than the household counterpart. They are non-toxic and safe to use around human beings or pets and are said to kill flying and crawling insects which have built up resistance to other insecticides. The pressurized spray is packed in 16-ounce containers and the liquid for use in mechanical dispensers, is available in one, five, 30 and 55 gallon containers. S. C. Johnson & Son, Inc., Racine, Wis.

For more details circle #848 on mailing card.

Speedball Steel Brush Added to Art and Lettering Tools

A new steel brush has been added to the Speedball pen line to fill the need for a tool that will provide both the control of a pen and the flexibility and

speed of a brush. It is ideal for large poster lettering, opaque fill-ins, signs and poster color work. The Speedball Steel brush assures an even flow of ink with no splattering or drip and is offered in $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{4}$ -inch widths. It fits any standard Speedball holder as well as any standard shank penholder. The C. Howard Hunt Pen Co., Camden, N.J.

For more details circle #849 on mailing card.

Economy Typing Chair Is Quickly Adjustable

Especially designed for use in typing classrooms, the new Model CPC 1520 Ajusto Chair is adjustable for use by short, tall or medium height students. The Ajustrite patented automatic adjusting mechanism allows the raising or lowering of seat height from 15 to 20 inches simply by lifting the seat up. The adjustment is accomplished instantly, easily and quietly. Adjustment of the



backrest to individual needs is also readily accomplished.

Form-fitting plywood back rest with both horizontal and vertical adjustment of five inches, and seat of the same material, make the chair a versatile and comfortable unit. Ajusto Equipment Co., 515 Conneaut, Bowling Green, O.

For more details circle #850 on mailing card.

Starkote Facing Tile Has Speckle Ceramic Glaze

A new structural facing tile called Starkote features a speckle ceramic glaze which is described as a neutral blue-gray background with gray and blue speckles. Starkote is ideal for walls requiring a high degree of sanitation, minimum maintenance and ease of installation. The body of Starkote is essentially the same in strength and tolerances as previous structural units. Stark Ceramics, Inc., Canton 1, Ohio.

For more details circle #851 on mailing card.

(Continued on page 70)

Fresh Lemonade in 18-Ounce Can

Sunkist now offers frozen lemonade in 18-ounce cans designed especially for institutional use. The new size provides easier handling, requires less storage space and makes a refreshing drink readily available in quantities with little preparation. Cost and quality control are possible as the new size will make one gallon of lemonade at a cost less than three cents per 10-ounce glass. Sunkist Growers, Inc., 707 W. Fifth St., Los Angeles 13, Calif.

For more details circle #852 on mailing card.

Public Address System in Portable Form

The new Davis Folding Sound Lectern has its own built-in public address system. The full unit is about the size of a small suitcase and can be easily carried to place of use. The microphone and reading lamp are held in the top compartment when carried and the desk folds into the cabinet. To operate, it is only necessary to place the unit on a table or stand, unfold the microphone, reading lamp and desk, and plug it into an A.C. outlet. When the amplifier is turned on, the speaker is ready to reach an audience of 50 to 500 people.

The cabinet is of rift white oak with hand rubbed lime oak finish. Provision is made for mixing two microphones and a phonograph or recorder. There are two built-in loudspeakers and remote speakers may be added for large groups. The Davis Folding Sound Lectern is 19



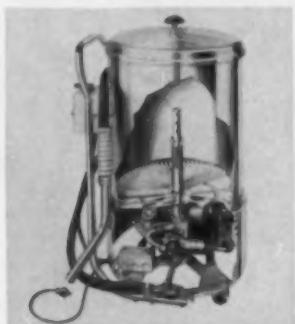
inches high, 20 inches wide and 11 inches across the bottom when folded. It weighs 32 pounds. Davis Sound, 106 Main St., Madison, N.J.

For more details circle #853 on mailing card.

What's New . . .

Filtering Machine Saves Cooking Fat

The Fry-Saver is a new fat filtering machine which operates without any



filtering aids. Cooking fat filters through a microscopically fine Porosite filter cartridge which removes all sludge and other impurities. The cartridge is replaceable when required and its special handle makes removing a clean and easy task.

The practically automatic method of fat filtering operates like a vacuum cleaner. The unfiltered cooking fat is quickly drained out of the fryer through the Fry-Saver intake hose which simplifies the procedure. If residue remains in the fat chamber, a filtered hot cooking fat flush is pumped back into the fryer, again drawn out and all the filtered fat pumped back into the clean fat chamber. The Fry-Saver is a self-contained electrically operated, portable unit, designed to be used by unskilled help. It is constructed for use with any deep-fat fryer. S. Blickman, Inc., Weehawken, N.J.

For more details circle #854 on mailing card.

Fresh Frozen Fish in Fillet-Cut Portion

The eye and appetite appeal of fresh fish is offered in the new frozen "Fillet-Cut Portion" Fish. Developed after two years of research, the new fillet shape has the appearance of a fresh fillet, yet is a uniform cut for precise portion control. Exact costs can thus be recorded with the new pre-breaded frozen fillets.



Made of choice skinless and boneless cod or haddock fillets, the new units are packed twenty portions to a five pound box and weigh exactly four ounces each. O'Donnell-Usen Fisheries, 1 Fish Pier, Boston 10, Mass.

For more details circle #855 on mailing card.

Push-Button Illumination for Research Microscope

The "R" series of microscopes developed by Bausch & Lomb now have push-button illumination for faster and easier specimen analysis. Incorporating many of the standard Dynoptic research design features, the new microscopes feature several major new developments in substage equipment. The achromatic variable focus container on the new model features push-button illumination, providing speed, accuracy and ease of operation through the use of unusually large lenses in the condenser, a graduated numerical aperture scale and a knurled ring for setting the lens system. The new series has other features for easier, more effective use. Bausch & Lomb Optical Co., 635 St. Paul St., Rochester, N.Y.

For more details circle #856 on mailing card.

Positive Latching Device Keeps Doors Closed

A new spring-actuated positive latching device for use on triple to six-tier box lockers keeps the doors closed even when not locked. Doors swing out only



when the latch is lifted. The exposed portion of the latching mechanism provides a padlock attachment. Lockers can also be equipped with built-in locks in addition to, or instead of the padlock attachment. Republic Steel Corporation, Berger Div., Canton, Ohio.

For more details circle #857 on mailing card.

Self-Polishing Wax Contains Vinyl

Vinyl, one of the toughest plastic substances, is combined with other new ingredients to form Simoniz Floor Wax With Vinyl. This new self-polishing floor wax is slip-resistant, highly scuff-resistant and water repellent. Ideal for heavily traveled areas in institutions, Simoniz Floor Wax With Vinyl can be used on linoleum, asphalt tile, rubber tile, vinyl tile and finished wood. It is easy to apply and equally easy to remove when desired. The new wax gives a tough, long-lasting finish which keeps bright and attractive with minimum care. Simoniz Company, 2100 Indiana Ave., Chicago 16.

For more details circle #858 on mailing card.

(Continued on page 72)

Steel and Wood Desk Has Swivel Seat

The solid, form-fitting seat of the new Mastermade Model 12900 Movable Desk swivels 45 degrees in either direction.



The seat is 15 by 14 inches in size, one inch thick. A noiseless, slamproof hinge facilitates opening and closing the 21 by 18-inch desk top.

Steel and Northern Hard Maple are combined to give strength and attractive appearance to the moveable desk unit. The one-piece steel book box is 21 by 18 inches in area, 5½ inches deep. It is constructed of 16-gauge pressed steel welded to the 11-gauge tubular steel frame. The Northern Hard Maple seat, back and desk top are finished in natural lacquer with metal parts finished in taupe baked-on enamel. The unit is equipped with 1½-inch rubber-cushioned metal glides. It is available in three sizes. E. W. A. Rowles Co., 106 N. Hickory St., Arlington Heights, Ill.

For more details circle #859 on mailing card.

Anti-Slip Treads Are Made of Aluminum

Lightweight aluminum is used in construction of the new Safestride treads for stairs, landing and floors. Made with a permanent, heavy-duty, non-corrosive aluminum alloy base in widths of three and six inches, the treads can be used in multiple sections to cover any desired area. They are furnished in lengths as required and are easily installed with screws or on masonry with screws and lead expansion shields. Locked-in safety



ribs containing abrasive aggregate ensure anti-slip qualities, whether wet or dry. Wooster Products Inc., 100 Spruce St., Wooster, Ohio.

For more details circle #860 on mailing card.

If you are **CRAMPED FOR SPACE**

**A Space Utilization Analysis by our
Specialists can show you how to
handle larger numbers of students by more
effectively using your present facilities,
how to schedule class and lab sections to
gain optimal room utilization, **how to**
make accurate determination of future
needs, **how to** integrate these future needs
more effectively, **how to** do this without
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College,
N.C.



Halsey Taylor Cooler in Girls' Dormitory

Halsey Taylor

S-72

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For all the various buildings on the campus, Halsey Taylor coolers and fountains were specified. Thus, this well-planned college provides every educational facility, plus the health-safety and dependability always assured by Halsey Taylor.

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EASE PARENT BURDEN
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As costs of tuition, room and board rise unavoidably, more than 500 colleges and schools have helped parents meet this problem by adopting The Tuition Plan. The Plan operates at no expense to the college. It offers parents a welcome alternative to lump-sum payments—a convenient monthly payment Tuition Plan contract.

In addition to a fully-paid enrollment at the start of every term and enhanced parent good will, colleges have enjoyed

these new benefits of The Tuition Plan: COLLEGE HAS NO FINANCIAL LIABILITY . . . on parent-signed contracts, colleges need not refund in event parent defaults on contract.

A FOUR, THREE OR TWO YEAR PLAN . . . now may be offered under one flexible contract.

LIFE INSURANCE INCLUDED . . . in event parent dies, life insurance takes care of total remaining costs covered by 4, 3 and 2 year contracts.



Write today for descriptive brochure.

THE TUITION PLAN, INC.

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What's New . . .

Mobile Book Truck
Has Two-Tiered Cabinet

A two tiered storage cabinet for general use becomes a mobile book truck when

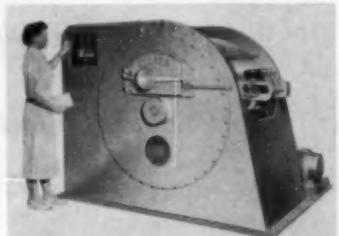


books are to be distributed or collected. An adaptation of the attractive, modern Brunswick storage cabinets, the unit has easy rolling wheels and extended sides to hold a maximum number of books. The colorful cabinet truck can be assembled from the Brunswick units in scores of door, shelf-divider and mounting combinations to meet the need. Shelf dimensions of the book truck meet the requirements of the wide variety of books used in schools. The interchangeable dividers permit assembling the books in categories and the smoothly finished, rounded edges of the shelves prevent damage to the volumes. The Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago 5.

For more details circle #861 on mailing card.

Automatic Washer-Extractor
Handles 200-Pound Load

A new 200-pound capacity machine has been added to the Glover line of automatic washer-extractors. The new model is fully automatic and washes,

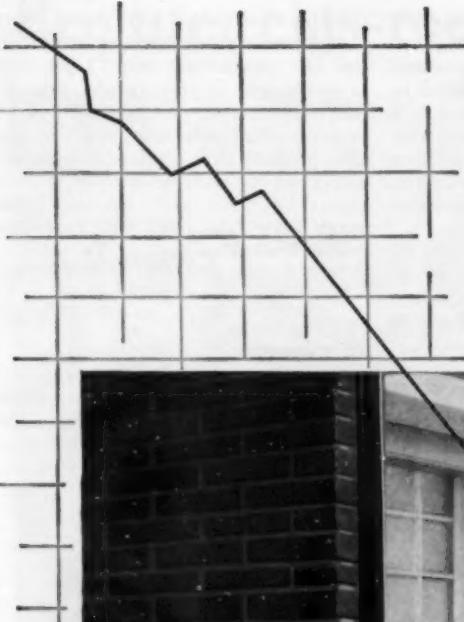


rinses, starches and extracts. It is capable of producing up to 300 pounds of clean laundry an hour, yet occupies only 74 by 94 inches of floor space.

The unit is equipped with the Glover Auto-Trol for pre-setting of washing, rinsing and extracting cycle, with automatic water level controls, and the Glover Auto-Feeder which premixes and supplies the correct ingredients at each cycle. It is constructed of heavy steel plate with the skirt, front and shell lined with stainless steel. The two-pocket type cylinder is stainless steel throughout. Bill Glover, Inc., 5204 Truman Rd., Kansas City 27, Mo.

For more details circle #862 on mailing card.

(Continued on page 74)



CUT "AFTER-HOURS" HEATING COSTS ON YOUR CAMPUS!



Heat Only The Rooms You Use

Heating an entire building at night or on weekends just for the sake of a few offices or a classroom or two is a needlessly expensive operation. A Johnson *Dual* Control System solves this costly problem by permitting you to heat only the rooms or portions of a building which are in use.

During the regular school day, famous *Dual* Thermostats assure ideal room temperatures throughout the building. Nights and weekends, thermostats are automatically reset to lower economy temperatures.

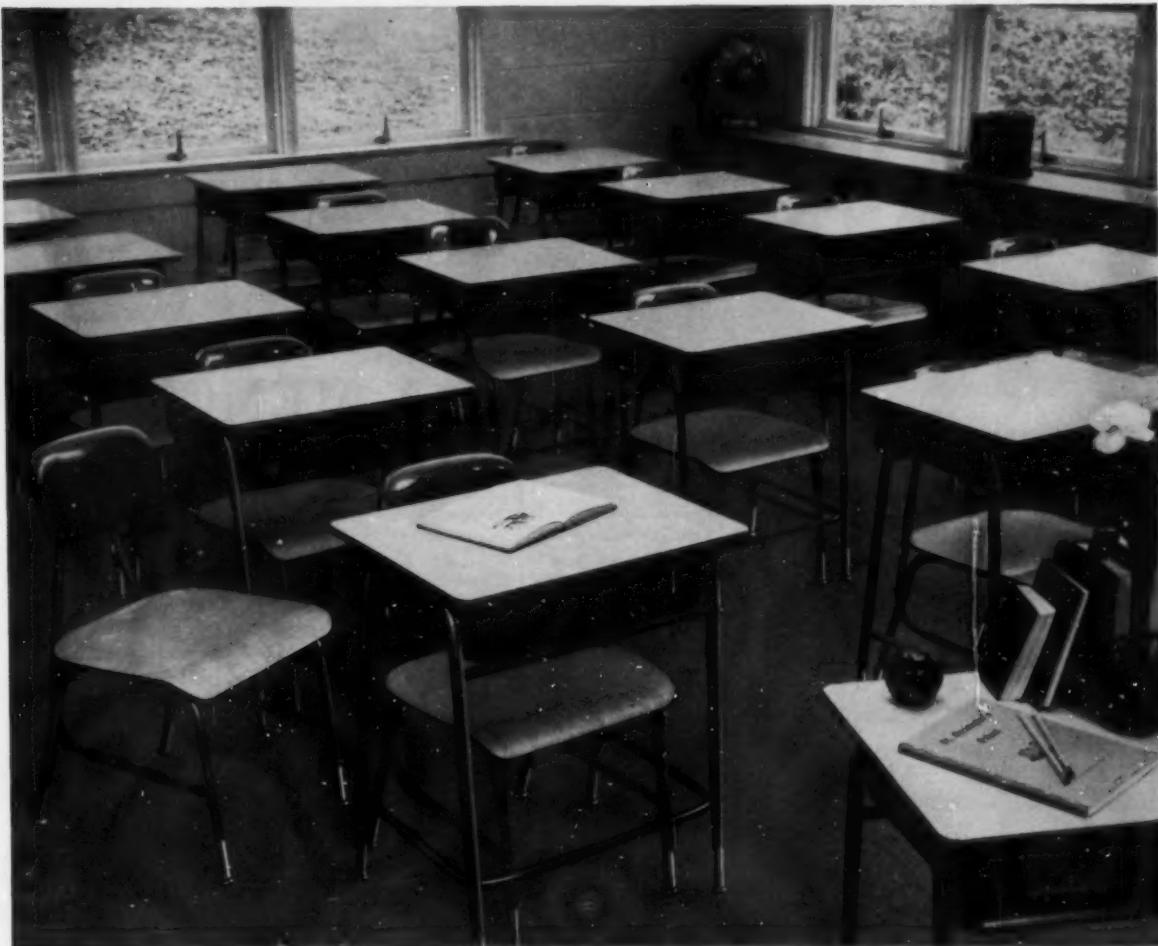
For "after-hours" occupancy, simply pressing the button on the *Dual* Thermostat restores any room to full comfort, *without changing the economy settings of the other thermostats in the building*.

Johnson *Dual* Control is the modern way to provide day and night comfort without heat waste for the buildings on your campus. It can be installed in both new and existing buildings. A nearby Johnson engineer will gladly discuss the many comfort and money-saving features of a *Dual* System with you, your consulting engineer or architect. There is no obligation. Johnson Service Company, Milwaukee 1, Wisconsin. Direct Branch Offices in Principal Cities.



JOHNSON  **CONTROL**
PNEUMATIC SYSTEMS
PLANNING • MANUFACTURING • INSTALLING • SINCE 1885

Brighter classrooms mean brighter pupils!



ACTUAL PHOTOS TAKEN AT ST. CHRISTOPHER'S SCHOOL, RICHMOND, VA.

Choose Cheerful Samsonite Classroom Furniture

Because the proper use of color improves student work attitudes, many of America's leading educators and psychologists prefer Samsonite Classroom Furniture. Samsonite brings a classroom out of the "dark ages." Here are furniture colors with life and cheer which blend beautifully with wall colors—all as a result of an extensive survey on school color. For furniture that helps pupils function, nothing can compare with Samsonite!

But Samsonite Classroom Furniture goes even further than this. It's remarkably comfortable—designed with compound-curved backs and special seats that aid proper posture and reduce restlessness. It's light and mobile—fits any ideas you may have. And it's more economical because it *lasts longer*. Mischief-proof, scuff-proof, mop-proof, Samsonite makes your budget go further than ever before! Write today for free color-catalogue!

Samsonite.... *strongest*.... *lasts longest*

Shwayder Bros., Inc., Classroom Furniture Division, Dept. CU6, Detroit 29, Mich. Also makers of famous Samsonite Luggage, Institutional Seating and Card Tables and Chairs for the Home. Merchandise available in Canada from Samsonite of Canada Ltd., Queens Highway, East, Stratford, Ontario.



Jane Henderson, Headmistress, Lower School, St. Christopher's School, Richmond, Va., says, "We selected Samsonite Classroom Furniture because the design and construction enable the pupils to sit comfortably and maintain proper positions without effort!"

What's New . . .

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CUT LABOR COST OF
MAINTENANCE BY AS
MUCH AS 50%?



HAVE BEAUTIFUL
BUT SAFE FLOORS?



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He's at your service
without cost.

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Redesigned Line of Spirit Duplicators

Several new improvements have been made in the Heyer line of Mark II Con-



queror spirit duplicators. Both the electric and hand driven models feature a new feed mechanism that works only in a forward motion for smooth continuous action.

Model 76 automatic electric duplicator also incorporates new high precision clutches, nylon gears, and an 11 and 14 inch cylinder stop. The motor bar to start the motor and feed is now on the operator's side for convenience. Model 70 hand-operated duplicator has a new feed release button and paper stackers. Both models print 110 copies per minute in one to five colors. **The Heyer Corp., 1850 S. Kostner Ave., Chicago 23.**

For more details circle #867 on mailing card.

Deluxe Utility Ball Has Nylon-Constructed Carcass

The CG8 DeLuxe Utility Ball is a new top-grade product in the eight and one-half inch size with the Voi E-Z Grip yellow stippled finish cover. It has a



nylon-constructed carcass with an internal bladder and rubber cover. The CG8 was developed in response to requests from schools for a sturdy, long-life utility ball. The ball has the same appearance and characteristics as an all-rubber bounce ball while utilizing athletic-ball type internal construction. **W. J. Voi Rubber Corp., 2945 E. 12th St., Los Angeles 23, Calif.**

For more details circle #868 on mailing card.

(Continued on page 80)

- For your Church
- For your Alma Mater



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MEMORIAL GIFT

- ▲ enduring in beauty
- ▲ practical in price
- ▲ efficient in installation
- ▲ simple in maintenance
- and, of course, tax-deductible

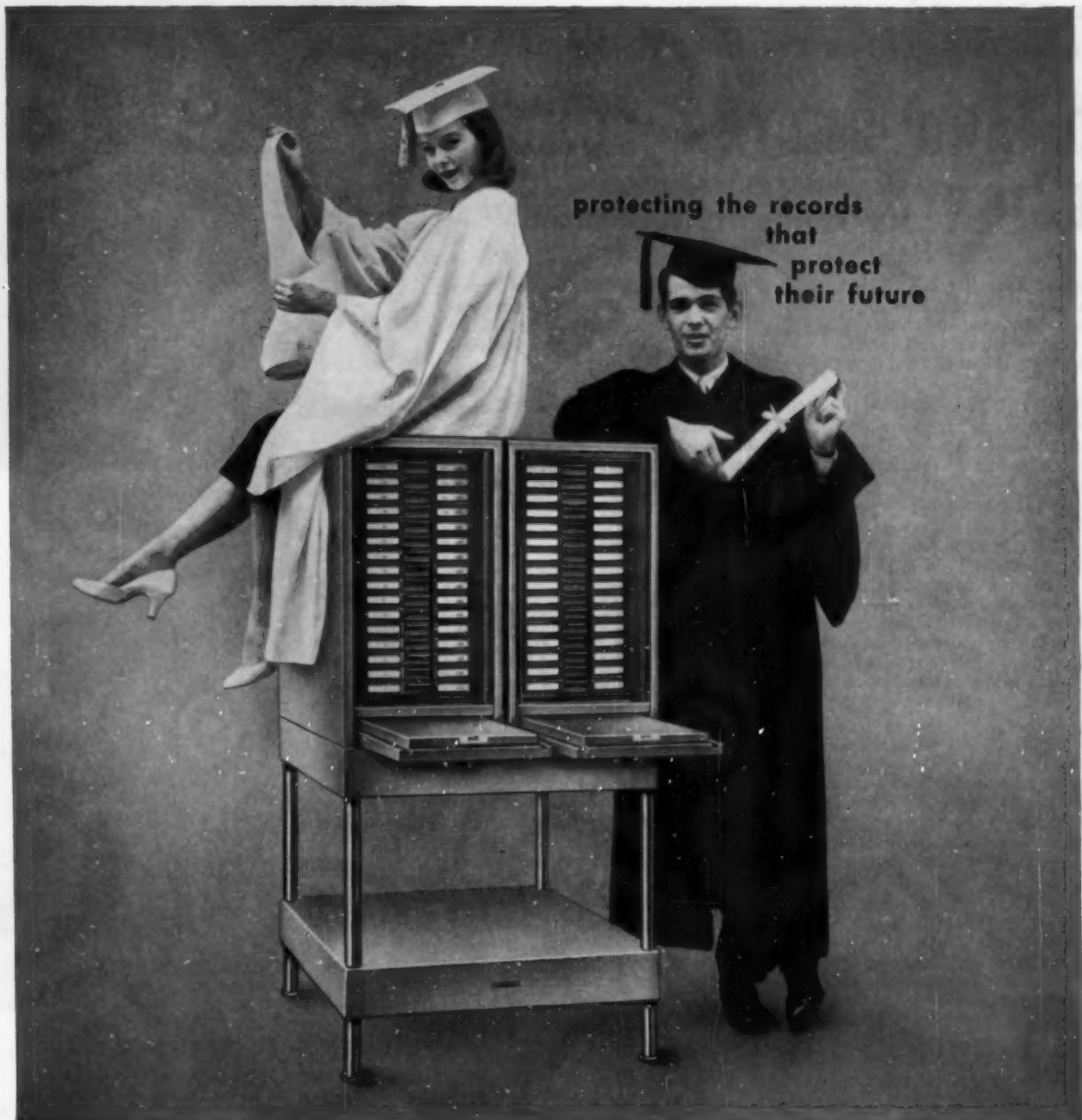
Individuals, families or corporations seeking an appropriate memorial gift can find a welcome answer in "Carillon Bells"** by Schulmerich. Here, in a truly practical package, is the beauty of old-world bell music . . . produced automatically and heard over any suitable distance. Universally accepted in churches, cathedrals, educational buildings. Sizes and types for all institutions.

**"Carillon Bells" is a trademark for Bell Instruments of

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protecting the records
that
protect
their future

Safe KARDEX®

You can protect their future by maintaining their vital student history records at point-of-use in REMINGTON RAND® certified, insulated equipment.

This makes sense, for every day 12 schools in the U.S. have fires and nearly half of all these fires occur during school hours when records are in use. If fire strikes your school, will your records survive?

"Your records...and how you can protect them" is a free offer booklet that can quickly assess the record pro-

tection your school requires. The need is now for fire-safe protection, and just to emphasize our point, we want you to have the factual story of Hillsboro High School and a fire that destroyed everything but the records. Of course, the records were housed in REMINGTON RAND insulated equipment.

Write to Room 1641, 315 Fourth Avenue, New York 10, N.Y. Ask for folders SC777 and SC781. Do it now, there's no obligation!

Remington Rand
DIVISION OF SPERRY RAND CORPORATION

"A REAL CONTRIBUTION TO SCHOOL PLANNING LITERATURE" John Lyon Reid

TOWARD BETTER SCHOOL DESIGN by William W. Caudill

So complex is today's task of designing good school buildings that school administrators need planning information that goes beyond physical considerations into the social, economic and cultural forces which affect the education process. At the same time they need practical information that offers concrete solutions to planning problems that they are encountering daily.

TOWARD BETTER SCHOOL DESIGN contains this vital information. Working from his immediate experience, William W. Caudill successfully relates school design to the aims and methods of education, to the influence of environment on the learning process, and to the role of schools as community institutions. He shows how the planner must assess every factor, weigh each one, and plan an architectural solution to his specific educational, economic and environmental problems.

William W. Caudill is eminently qualified to render aid and advice on the task of planning schools and school building programs. In his twenty-year school planning career he has won an international reputation for combining a practical approach with exciting creative vision. As research architect at the Texas Engineering Experiment Station of Texas A. & M., he pioneered studies of classroom shapes and sizes as related to physical and emotional environment, and formulated many of the basic principles upon which good schools are being built today. During the last four years he has designed over fifty schools and has lectured and served as a consultant throughout the United States.

Education and Environment: Caudill demands that a good school must be designed from the inside out, and "every idea, every material, every dollar related to the needs of the pupil." What are the physical and emotional needs of the pupil? How does the learning process affect the form of the building? What is the best physical and emotional environment in terms of room shape and size, fenestration, ceiling height, light, color, textures, acoustics, ventilation, landscaping?

Economy: Caudill attacks the problems of costs head-on. He clearly differentiates between "low-cost" schools and "economical" schools, and quotes actual cost figures to illustrate his points. He explains how to set up a cost-control plan, and how total costs are affected by land, shape and size of building, materials, structural frame, construction methods, space allocation, and service equipment. He compares prime and maintenance costs to show how "saving" on one may produce serious loss on the other. Finally, he discusses the proper timing of bid-letting as a cost-cutting tactic.

SEVEN EXTENSIVE SECTIONS

*the PUPIL and the school plant
EDUCATION and the school plant
ENVIRONMENT and the school plant
ECONOMY and the school plant
CITY PLANNING and the school plant
the DIVISION OF SPACE for effective education
the PLANNING PROCESS and the school plant*

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288 pages, 8 1/4 x 11 1/4", 400 illustrations, \$12.75



91 SPECIFIC CASE-STUDIES FROM ACTUAL PROJECTS

Each case study is presented in 3 parts: 1) the Problem, 2) the Approach, 3) the Solution. Here are a few of them:

- Can boiler rooms have educational functions?
- How can a very small site located in enormously expensive property be best utilized?
- Can improvements in the appearance and economy of hardware be made?
- Can corridors be used for educational purposes?
- What is a good way to provide easel painting in Kindergarten?
- Can a school library be designed to serve the community?
- Can toilets be designed to minimize control problems?
- Can open type corridors be used successfully in Northern-most areas?
- Can low budget gyms be lighted by natural means effectively?
- Can improvements be made on combination or cafeteria service with other school functions in an elementary school?
- Can a highly compact school plant have decentralized classrooms?



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originator of tubular folding chairs
ANNOUNCES SEVEN
OUTSTANDING NEW MODELS



Here's the biggest folding chair news in years:

Famous *Royal* quality—mass-produced, competitively priced—again can be yours in this versatile, space-saving seating!

We've always liked to make folding chairs. And we're glad to be back in the business . . . pleased that our much enlarged facilities now permit efficient, quality folding chair output without affecting production of other fine *Royal* Metal Furniture.

During the years since we discontinued folding chairs, many of our friends asked us to reconsider. But—until the current demands of rapid school expansion and today's insistence on comfort, long life, and economy—we believed *Royal* craftsmanship could best serve our customers when concentrated on other types of furniture.

The illustrations on this page show how completely our thinking has changed. Graceful yet stable, trim yet sturdy, new *Royal* Folding Chairs demonstrate thoughtful, careful planning, but—first of all—they're designed to be practical. All may be "ganged" into multiple-seating with clamps we can furnish. See your *Royal* Dealer or write us for specifications and prices.

There's a Royal folding chair for every need!



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In Canada: Royal Metal Manufacturing Co. Limited, Galt, Ontario

FINEST FOLDING CHAIR BUILT

Royal Model 649. Comfortable, upholstered Flex-Spring seat. Thickly padded and upholstered back. Choice of *Royal* Super-Tuftex upholsteries. Famous *Royal* chrome plating. Height: open, 31½"; folded, 40". Depth, folded, 3"



MODEL 640
All-steel stamina, saddle-shaped seat. Plastelle enamel.



MODEL 645
Back, seat, thickly padded, upholstered. Plastelle enamel.



MODEL 642
Roll-formed seat, Masonite panel. Plastelle enamel.



MODEL 646
Upholstered Flex-Spring seat. Plastelle enamel.



MODEL 644
Seat, thickly padded, upholstered. Plastelle enamel.



MODEL 647
Upholstered Flex-Spring seat, padded back. Plastelle enamel.

What's New . . .



FOLDOORS at Harvard University, Cambridge, Mass.



FOLDOORS at Indiana University Medical Center, Indianapolis, Ind.



FOLDOORS at Waynesville (North Carolina) High School.

● More and more schools and colleges are turning to FOLDOOR to gain added classrooms or other double-duty space.

Whether you are building or remodeling to get more room, see your FOLDOOR distributor (listed in the yellow pages)—or write us direct.

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Ditto Masterset Has Smudge Protection

A new four-part Masterset for Direct Process (liquid or fluid reproduction) is



designed for smudge-free use. An attached protection sheet prevents contact with either the Direct Process carbon sheet or the finished master, permitting the master to be handled and filed without staining hands, clothes or papers.

The new Masterset consists of the master sheet, tissue separator, Direct Process carbon sheet and the protection sheet. In preparing the master, the tissue separator is removed to permit the master sheet to pick up the dye impression from the carbon sheet which is discarded on completion. The protection sheet acts as a backing to provide a clear, sharp image transfer and protects the dye when the master is filed. **Ditto, Inc., 6804 N. McCormick, Chicago 45.**

For more details circle #869 on mailing card.

Filmosound Projector for Large Auditoriums

Two new Bell & Howell 16mm Filmosound Projectors feature a 50 per cent



increase in power plus distortion-free sound at high levels for practical use in large auditoriums, classrooms and other areas. The 302D and 302E models have 15-watt amplifiers which compensate for variations in film prints and assure full sound volume in low-voltage areas.

The Filmosound allows the user to record his own soundtrack on film as well as to project both magnetic and optical sound and silent films. The new models also feature separate tone controls for treble and bass. **Bell & Howell Co., 7100 McCormick Rd., Chicago 45.**

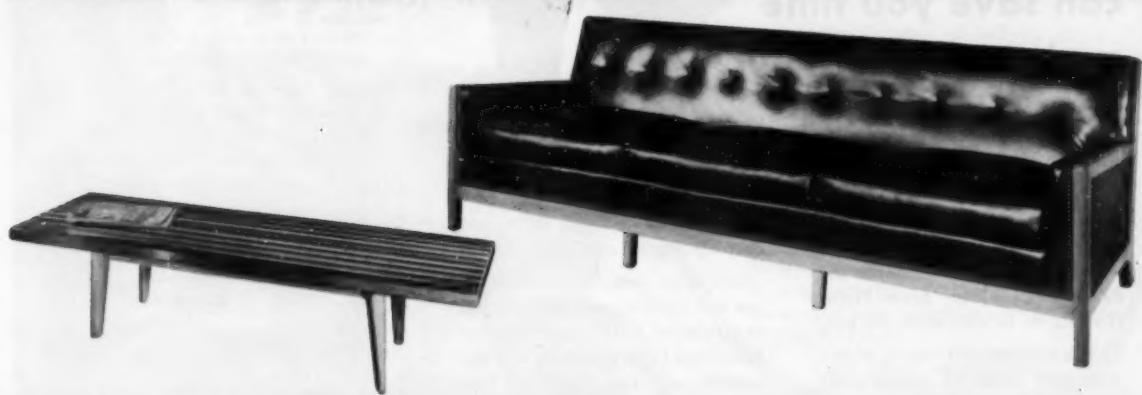
For more details circle #870 on mailing card.

(Continued on page 82)

NOTHING EQUALS THE WARMTH OF WOOD



OR ITS ABILITY TO RETAIN BEAUTY AND STRENGTH



AND FOR THE VERY BEST IN WOOD FURNITURE, SELECT



Furniture by
HUNTINGTON
-always in good Taste

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CUB
6-57

What's New . . .



how a Hamilton Field Engineer can save you time and money on your new laboratory!

Whether you're planning a major project or a simple addition to your existing facilities . . . if your plans are still at the idea stage or all set to go—it makes no difference. The man from Hamilton is the man to see. This is a wonderful way to check your own ideas, to complement your own planning knowledge and to insure that your plans take full advantage of the many

cost efficiencies available to you. There is no cost for this service, nor any obligation. Why not get acquainted with your nearby Hamilton Field Engineer and the wealth of experience he has available for you? A letter to us will arrange an appointment at your office, at your convenience.



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HAMILTON MANUFACTURING COMPANY • TWO RIVERS, WISCONSIN

Clean-Dish Trucks in Two Sizes

New Lakeside stainless steel clean-dish trucks are offered in two sizes for individual requirements in storing, carrying and distributing dishes. Model 405 is 18 by 21 inches and Model 407 is 27 by 37½ inches. Both are 32 inches high to roll under the average counter, and have a 400 pound carrying capacity.

The "Store'n'Carry" dish trucks are loaded from one side only. Dividers are omitted so any size or combination of dishes can be easily handled. The lower shelf offers extra storage and carrying capacity. Other construction features include double-strength uprights, extra braces at points of stress, reinforced dish shelf and easy-rolling ball-bearing casters. Lakeside Mfg. Co., 1977 S. Allis St., Milwaukee 7, Wis.

For more details circle #871 on mailing card.

Three-Process Unit in Electric Food Handler

Juicing, slicing and shredding are handled in the new Oster unit which attaches to the base of the Osterizer lique-



ifier-blender. A separate disc is provided for each operation of the three-process unit. Almost all fruits can be made into juice with the juicer. In addition to oranges, juice can be prepared from apples, plums, mangos, berries, papayas, grapefruit and fresh pineapple. Vegetables and fruits are quickly and efficiently sliced or shredded with the special discs provided. John Oster Mfg. Co., 5055 N. Lydell Ave., Milwaukee 17, Wis.

For more details circle #872 on mailing card.
(Continued on page 84)

So Far Ahead

..it's a new experience
in floor cleaning!

Hillyard
scrubs polishes
steel wools • sands
grinds

SINGLE BRUSH

hilboy®

low and powerful

with features

never before found
in a floor machine:

available in 21"
and 17" models

Newly designed wide, flat,
powerful G. E. motor—exclusively Hillyard's.

New low silhouette—low to go
anywhere

New low center of gravity gives
better balance, easier control—new
convenience of handling

New functional design for strength
and efficiency—no dirt traps!

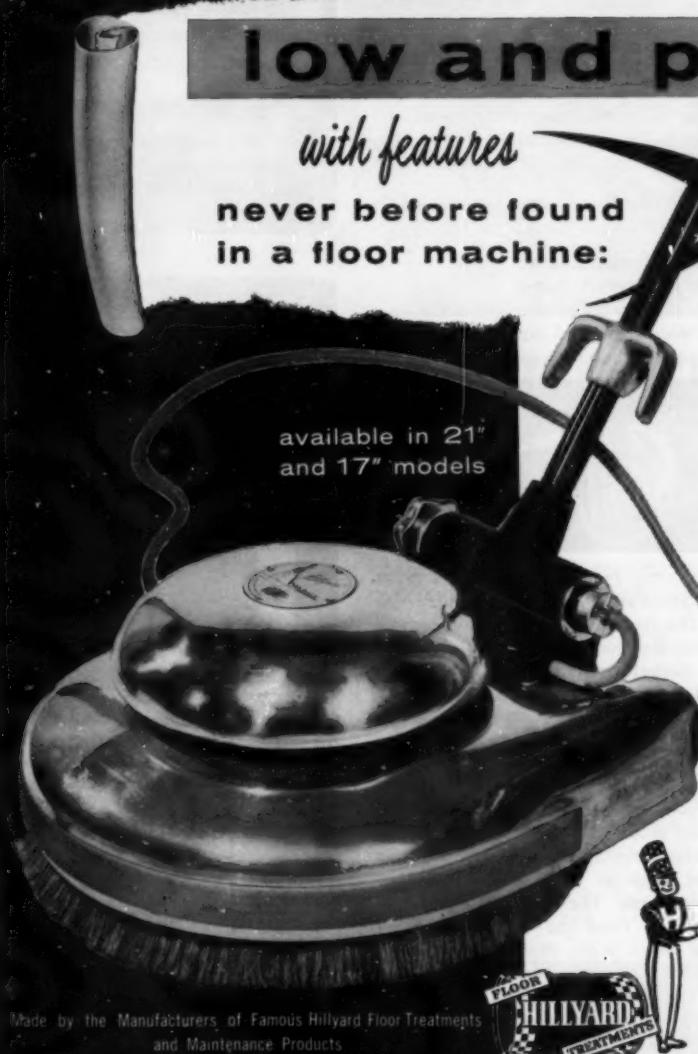
New fatigue-free contoured handle,
with counterbalanced palm switch

New quietness and smoothness of
operation

New—turn switch to change direction
of brush rotation, double brush life

New—just turn switch to change from
110 to 220 volts

—yet priced competitively!



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folder—tells you why this is the best
buy. Mail coupon today!

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What's New . . .

PIANO MOVING made safe!

For the movers
For the piano
For the floors



Model D-260
Grand Piano
Carrier

YOUNG PIANO CARRIERS



Model D-250 Upright Piano Carrier

- YOUNG Carriers move pianos without tilt or strain. Even with one man, personal safety to the mover is assured.
- Pianos moved without carriers soon go out of tune because of jars and stress. YOUNG'S carriers protect pianos completely.
- The 5" ball-bearing swivel casters used on YOUNG Piano Carriers have thick cushion rubber treads — safe for finest floors.
- Pianos can remain permanently on carriers. Playing is in no way affected. There is a carrier to fit every type and size piano.

Write today for free catalog 3-48.

UTILITY TRUCKS FOR SCHOOLS

THE PAUL O. YOUNG CO.
School Truck Division
LINE LEXINGTON, PENNA.

Low-Profile Metal Building Has Wide Span

Low profile and wide span with post-free interior are features of the new line of metal buildings introduced by Butler



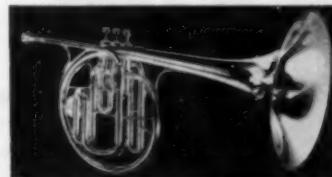
Manufacturing Company. The clear span, rigid steel frame permits full use of the floor area. The low pitch retains advantages of a gable roof. The steel framework is specially designed, yet is strong enough to span floor areas up to 100 feet wide without the use of interior posts or roof trusses.

The frames are pre-engineered and mass produced to fit together perfectly and to save time and costs in construction. Exterior walls can be of metal or of any non-load-bearing curtain type, including large expanses of glass. The new buildings are designed for use as classrooms, auditoriums, field houses and similar wide area facilities. **Butler Mfg. Co., 7400 E. 13th St., Kansas City 26, Mo.**

For more details circle #873 on mailing card.

Musical Instruments With Improved Tone

Several new musical instruments have been added to the Conn line for 1957. The new Mellophonium, illustrated, has



a horizontal bell which produces what is described as an entirely new tone. Also new this year is the Herald Trumpet offering the pomp of medieval heraldry with modern, true tones, and the Valve Trombone which adds valve technic to the mellow tone of Conn slide trombones. Other new instruments are also available in the new line.

Years of research and development have gone into the new instruments and into the modified old-line models which have the advantage of the Conn features of the past as well as the modern improvements. The Constellation group, the Victor line, the new Conquest group, which is the professional student line, and the inexpensive Director line, fill every need for wind instruments, regardless of ability or economic status. **C. G. Conn, Ltd., Elkhart, Ind.**

For more details circle #874 on mailing card.
(Continued on page 86)



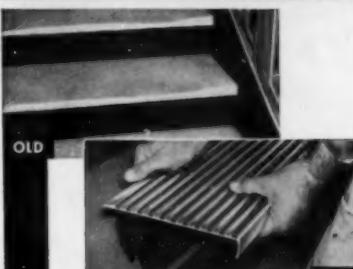
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Exclusive National Sales Agency for **Meterflo®** Liquid Dispensers

FOR AUTOMATIC "PORTION CONTROLLED" DISPENSING OF BULK LIQUIDS IN RESTAURANTS, HOTELS, CAFETERIAS, FOUNTAINS, DRIVE-INS, AND FOR THE FOOD SERVICE DEPARTMENTS OF SCHOOLS, UNIVERSITIES, HOSPITALS, AND OTHER INSTITUTIONS

FOOD MACHINERY AND CHEMICAL CORP.
Kitchen Equipment Department
HOPESTON, ILL. • CHICAGO, ILL.
SAN JOSE, CALIF.

Stairways Dangerous?



Make them safe this
easy practical way

FREE
New
Bulletin
shows how
to repair
worn
dangerous
stairs
GET
FULL
DETAILS

Superimpose ALUMINUM STAIR-MASTER SAFETY TREADS over worn steps. Safety-ribs contain diamond-hard abrasive grit for positive anti-slip protection. Aluminum base can't corrode. Minimize accidents, end makeshift repairs with this architecturally approved method.

WOOSTER PRODUCTS INC. 8-10
Spruce St., Wooster, O.

Name _____ Title _____
Company _____
Address _____
City _____ State _____



LINDEN, N.J.

TORNADO HITS ST. THERESA'S CHURCH

... and leaves the floors scrubbed
and BONE-DRY—

But this Tornado was no disaster. Anything but. It is the Tornado cleaning and polishing system that makes it possible for St. Theresa custodians to scrub and polish their beautiful imported Italian marble floors in a matter of hours—not days.

First gently but vigorously scrubbed with a Tornado floor machine—the scrubbing solutions are then removed instantly and completely from the floors with a Tornado vacuum. The floors are left bone-dry, ready immediately for waxing with the Tornado floor machine. Until Tornado "hit St. Theresa's," the job took a week—with Tornado, it now takes just one day!

So let Tornado hit your school, your building, your factory, or your office. You'll be glad you did. For any cleaning job, from floor to ceiling, Tornado does it better, quicker, safer.

Don't try it tomorrow—try it today!

Write for Bulletin No. 707 and 763.



Scrubbing and polishing under and between pews is a breeze for this Tornado floor machine.



Tornado Vacuum
instantly cleans those
hard-to-reach places.

BREUER ELECTRIC MFG. CO.

5098 NORTH RAVENSWOOD AVENUE • CHICAGO 40, ILLINOIS • Longbeach 1-6162

What's New . . .

Wear-Ever Utensils Added to Institutional Line

Four new Wear-Ever pans have been added to the institutional line of aluminum cooking utensils. They include a tote pan, an oven sheet pan (top row),



a Freezer-D-Froster and a roasting pan (bottom row).

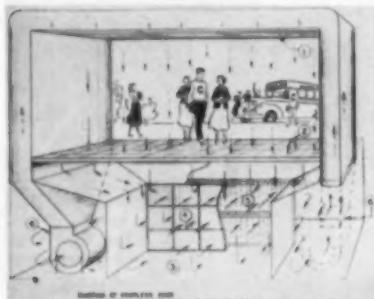
The seamless tote pan has a raised ridge near the bottom for easy stacking and is 20-3/16 inches long, 15-1/8 inches wide and 4-1/2 inches deep. The double-depth oven sheet pan allows baked goods to raise higher. It bakes 50 portions and fits standard bun pan racks.

The Freezer-D-Froster eliminates shutting down freezers for defrosting. The cast aluminum scoop has a stainless steel 5-1/2 inch cutting edge which removes frost without scratching the cabinet. All frost is caught up by the large scoop for easy disposal. The roasting pan fits standard pan racks for easy transfer from oven to refrigerator and is designed for use in deck type ovens. It is 25-1/4 inches long, 17-1/4 inches wide and 3-1/2 inches deep. Aluminum Cooking Utensil Co., Inc., H & I Div., Wear-Ever Bldg., New Kensington, Pa.

For more details circle #875 on mailing card.

Doorless Doors Prevent Traffic Jams

The Swiss engineering development known as Doorless Doors has been adapted for use in educational institutions. A screen of air serves as an insulating wall to protect the interior of the building from all outside weather conditions. At the same time, pupils and instructors can walk in and out of the building without hindrance as the gentle flow of air does not disturb clothes or hair. Pupils with arms full of books can leave or enter without possibility of ac-



cident and without effort. Thus delays are reduced in entrance and exit during busy hours.

Operated by a series of overhead noz-

zles located in the ceiling grill, the air is sucked into a floor grating the full width of the entrance. It is carried through a heating or cooling unit after being filtered and cleaned, then moved through ducts to the ceiling and recirculated. The nozzles are adjustable and the velocity of the air flow can be changed manually or automatically to meet variable weather conditions. When the school or college building is closed, glass doors slide into place and are locked for the night. The system is said to keep the entrance clean in all weather conditions, to prevent heat loss in winter and cool air loss in summer and to have many other advantages. **Sulzer Bros., 50 Church St., New York 7.**

For more details circle #876 on mailing card.

Refuse Cans and Pails in Stainless Steel

The new Witt stainless steel cans and pails meet the health and sanitation requirements of institutional use and are constructed of 24-gauge type 304 stainless steel with a 2B finish for heavy duty use. They are equipped with 1/8 by 2-1/2 inch stainless steel bands at top and bot-



tom for added strength and longer wear. The lids fit snugly over the cans, yet are readily removed. Cans are available in 12-1/4, 16, 20, 27 and 33-gallon sizes and pails come in 5, 7, 8-1/2 and 10-gallon capacities. **The Witt Cornice Co., 2121 Winchell Ave., Cincinnati 14, Ohio.**

For more details circle #877 on mailing card.

Custom Ceiling Lighting in Standard Package

The new Sylvania Sylva-Lume Lighting System permits a wide variety of custom designs from a few standard parts. It is a modular, interchangeable plastic panel system which offers many design patterns through color, form, texture and style.

Design is achieved through the use of three styles of diffusing panels; shallow, deep and drumhead (illustrated), each with color variations, plus a three-foot long Acoustic Baffle in three colors. Baffles can be used to frame panels or run in rows lengthwise or crosswise between panels. These elements can be combined for variety in design as well as contrasts in color, depth and texture. Other major elements making up the

(Continued on page 90)

Sylva-Lume system include perimeter panels, track system and the new "Outrigger" fixture. The perimeter panel of hot steel with perforated random circles



in two sizes is used to extend the central modular design area to meet walls on the sides. The track system is an extruded aluminum suspension grid system which is the supporting frame work for the diffusing panels. The "Outrigger" fixture, designed for wall-to-wall lighting is an H-shaped frame in eight or six-foot lengths for holding four and eight-foot fluorescent lamps. **Sylvania Electric Products Inc., One 48th St., Wheeling, W. Va.**

For more details circle #878 on mailing card.

Tip Top Cafeteria Table Is Portable Model

A small cafeteria model is offered in the line of folding table and bench combinations redesigned by the industrial designers, Lippincott and Margulies, for Sico. The Tip Top folding table is available in six, seven or eight-foot lengths in a portable unit for cafeteria use. The eight-foot model has a seating capacity of ten adults or fourteen children. It folds in an upright position to facilitate nesting storage and is available in table and bench heights of 25 and 13 inches, 27 and 15 inches and 29 and 17 inches.

The new units have modern design to harmonize with contemporary school interiors, with honeycomb core bonded to Masonite and edged with Preswood for improved table-top construction. The table top is impervious to damage in ordinary school use and there are no crevices to collect soil. The folding frame and legs have also been improved while



the folding mechanism retains its safety factors. The L-B portable table in eight, ten or twelve-foot lengths is designed for use with chairs. **Sico Mfg. Co., Inc., 5215 Eden Ave. S., Minneapolis 24, Minn.**

For more details circle #879 on mailing card.



Solid Kumfort in every Student Room.

BUCHANAN-MARSHALL

DORMITORY has 109

Double Rooms

with two

Solid Kumfort

Chairs That Fold

in each.



Model 452 Rastetter Chairs in the Dining Hall.

SOLID KUMFORT

Chairs that fold

IN FRANKLIN AND MARSHALL COLLEGE
LANCASTER, PENNSYLVANIA

THE ATTRACTIVENESS and comfort of each of 109 rooms in the Buchanan-Marshall Dormitory at Franklin and Marshall College is enhanced by two of these beautifully styled chairs which match the home-like surroundings. Several hundred more are used in the Dining Hall. They find Solid Kumfort Chairs That Fold unusually convenient and useful because they can be moved from room to room easily, or stored in small space.

The famous Hinge and Brace construction makes them far stronger than conventional chairs of equal weight, so they stay out of the repair shop. For up-to-the-minute style, outstanding beauty, cushioned comfort and long life, plus mobility . . . choose Solid Kumfort whenever you need chairs to solve a public seating problem.



MODEL 452



FOLD
FLAT



LOUIS RASTETTER AND SONS COMPANY

1326 WALL STREET • FORT WAYNE 1, INDIANA



Write today for Portfolio
showing complete line of
Wood and Magnesium
Chairs That Fold.

THE "monroe MASTER" SCHOOL FOLDING TABLE



MODEL 3WM • WOOD FRAME • MASONITE TOP • AUTOMATIC LOCK

The newest innovation in the school table field, from the 50-year old Monroe organization, leaders in folding tables and other fine furniture. The 3WM is unsurpassed in construction and design. It features: 1. Extruded plastic flush T moulding with bronze finish. 2. Top is bonded to plywood frame backing. 3. Wood frame or apron machine moulded, preserving the natural beauty of the wood. (Also available in Model 8, with steel apron.) 4. New Monroe automatic lock on the pedestal assembly. Offered in 8 sizes and four top finishes, Masonite (shown), also Ornacel Blon-D, Formica and Resilite.

OUR GOLDEN ANNIVERSARY

The Monroe Company is entering its 50th year of service to customers and patrons. In that time we have become the world's largest manufacturers of folding banquet tables, selling direct to schools, churches and other institutions.



MONROE CLASSROOM CHAIR 578

9 Graded Heights, from 10" to 18". Ideal for classes, cafeterias, church schools. Streamlined tubular steel frame, baked-on light brown enamel, contoured back and seat. Also steel folding chairs, several styles.

MONROE OPEN FRONT DESK 996

11 Graded Heights, from 29" to 39". Desk top light wood grain, high quality plastic. Light weight but solidly built tubular steel frame, baked-on light brown enamel. Book box sides and bottom made of heavy sheet steel. Also Monroe chair desks and folding tablet arm chairs.



MONROE STEEL FOLDING CHAIRS

Attractive range of styles, sizes and prices. Excel in comfort, easy handling, durability.



Truck TSB

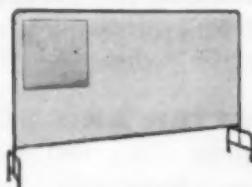
MONROE MOVABLE PARTITIONS

Change idle space to useful areas. Use the space for the needs you have. Monroe Partitions, sturdy built and good looking. Smooth Masonite panels, durable tubing, and steel shelf glides, etc. easers. Chalk board surface or bulletin board (cork) available. These partitions are a modern educational addition which have had immediate and enthusiastic acceptance by schools and other institutions everywhere.



Monroe Folding Risers & Platforms

Most modern, practical, safe and economical units for staging orchestras, choral groups, bands, plays, commencements, etc.



MONROE DELUXE FOLDING PEDESTAL TABLE 3M

Above picture identifies the famous Monroe Folding Pedestal Banquet Table which is known from coast to coast and in foreign countries. This is size 30x96 inches, with Masonite top. Schools and colleges, as well as churches, societies, and all organizations prize their Monroe No. 3 Tables. 7 other sizes, in three colorful top materials. Also utility folding tables including round, square, etc.

MONROE ROUND "ROLL-AWAY" FOLDING TABLE 48R

For heavy duty with ease of handling. The Monroe 48R is 48" in diameter, also comes 54", 60" and 72" and customer built for large banquet settings. Positive locking. Our new round table segments afford almost unlimited capacity and attractive arrangements.



MONROE ADJUSTABLE HEIGHT FOLDING PEDESTAL TABLE 3DT

The folding table that adjusts to any height from 20 to 30 inches, from kindergartners to adults. No tools required. Will not slip or collapse. Also comes with teacher's recess at one side for intimate class supervision.



DIRECT FACTORY PRICES AND DISCOUNTS

The Monroe Company has long been recognized for its leadership in folding tables, now in use by over 42,000 schools, colleges, churches, clubs, lodges and other institutions. In addition it offers a complete line of folding steel chairs, trucks for tables and chairs, school chairs and desks, risers and platforms, movable partitions, etc. Our complete catalog is a guide to equipment purchasing, with factory prices and quantity discounts to all organizations. Write for it today.

THE MONROE COMPANY • 77 CHURCH ST., COLFAX, IOWA

NEW
Monroe
FOLDING TABLE
CATALOG



HOLOPHANE

Engineered Lighting For
INDOOR RECREATIONAL
and ASSEMBLY AREAS...

(Above) GYMNASIUM lighted by Prismatic Glass LOBAY® Reflectors . . . Dartmouth High School, Dartmouth, Mass. . . Creer, Kent, Cruise & Aldrich, Archts., John W. King, Elect. Engr., Providence, R. I.

(Right) AUDITORIUM lighted by double Flush In-Bilt units . . . Moon Township High School . . . Button & McLean, Archts., Pittsburgh, Pa.

(Below) ASSEMBLY HALL . . . HIBAY® Reflector lighting using incandescent and mercury vapor lamps . . . McGaw Memorial Hall, Northwestern University, Evanston, Ill. . . Holabird & Root & Burgee, Architects & Engineers, Chicago.



For Better Lighting



HOLOPHANE COMPANY, INC.
Lighting Authorities Since 1898
342 Madison Ave., New York 17, N.Y.
THE HOLOPHANE CO., LTD., THE QUEENSWAY, TORONTO 14, ONTARIO

Advanced educational methods have called for marked advances in lighting techniques . . . Holophane engineers have pioneered in the progress of school illumination by developing specific units for each work or play need . . . The photographs here show the effective use of Holophane units for lighting indoor sports and assembly areas. Equally advantageous results have been achieved in planned lighting of classrooms, corridors and auxiliary spaces throughout the modern school or college . . . The Holophane engineering staff offers authoritative counsel, without obligation, on any educational lighting project.

Write today for our interesting new booklet, "Lighting Indoor Sports and Assembly Areas".

®

THE "monroe MASTER" SCHOOL FOLDING TABLE



MODEL 3WM • WOOD FRAME • MASONITE TOP • AUTOMATIC LOCK

The newest innovation in the school table field, from the 50-year old Monroe organization, leaders in folding tables and other fine furniture. The 3WM is unsurpassed in construction and design. It features: 1. Extruded plastic flush T moulding with bronze finish. 2. Top is bonded to plywood frame backing. 3. Wood frame or apron machine moulded, preserving the natural beauty of the wood. (Also available in Model E, with steel apron.) 4. New Monroe automatic lock on the pedestal assembly. Offered in 8 sizes and four top finishes, Masonite (shown), also Ornacl Blon-D, Formica and Resylite.

OUR GOLDEN ANNIVERSARY

The Monroe Company is entering its 50th year of service to customers and patrons. In that time we have become the world's largest manufacturers of folding banquet tables, selling direct to schools, churches and other institutions.



MONROE CLASSROOM CHAIR 578

9 Graded Heights, from 10" to 18". Ideal for classes, cafeterias, church schools. Streamlined tubular steel frame, baked-on light brown enamel, contoured back and seat. Also steel folding chairs, several styles.

MONROE OPEN FRONT DESK 996

11 Graded Heights, from 20" to 30". Desk top light wood grain, high quality plastic. Light weight but solidly built tubular steel frame, baked-on light brown enamel. Book box sides and bottom made of heavy sheet steel. Also Monroe chair desks and folding tablet arm chairs.



MONROE STEEL FOLDING CHAIRS

Attractive range of styles, sizes and prices. Excel in comfort, easy handling, durability.



Table Truck T88

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Change idle space to useful areas. Use the space for what needs you have. Monroe Partitions are sturdy, built and good looking. Smooth Masonite panels, durable tubular steel frames, a level gliding casters. Chalk board surface or bulletin board (cork) available. These partitions are a recent Monroe introduction which have immediate and enthusiastic acceptance by schools and other institutions everywhere.



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Most modern, practical, safe and economical units for staging orchestras, choral groups, bands, plays, commencements, etc.

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The Monroe Company has long been recognized for its leadership in folding tables, now in use by over 42,000 schools, colleges, churches, clubs, lodges and other institutions. In addition it offers a complete line of folding steel chairs, trucks for tables and chairs, school chairs and desks, risers and platforms, movable partitions, etc. Our complete catalog is a guide to equipment purchasing, with factory prices and quantity discounts to all organizations. Write for it today.

NEW Monroe FOLDING TABLE CATALOG

THE MONROE COMPANY • 77 CHURCH ST., COLFAX, IOWA



HOLOPHANE

Engineered Lighting For
INDOOR RECREATIONAL
and ASSEMBLY AREAS...

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Write today for our interesting new booklet, "Lighting Indoor Sports and Assembly Areas".

*®

IF you are using slow, tiresome mop-and-pail methods, or



IF your present machines cause headaches by poor work or frequent breakdowns...
switch to **AMERICAN Floor-Kings, Vac-Kings!**

You can make floor cleaning easier for the custodian, improve over-all sanitation, and lower costs for management in one simple step: put American Floor Machines and Vacs on your job!

Performance of these modern versatile machines will enable you to clean *more* and clean *faster*! Complete range of models with years-ahead features and American dependability for any job, any budget. Rotary-type, 13" to 23" brush sizes, 1/3 to 1-1/2 H.P.; Vacuums: from 3 to 55 gallons, wet or dry pick-up. Dozens of job-tested attachments for floors, rugs, off-floor cleaning. Ask for free demonstration on your job. Write for illustrated brochure on complete line of American floor maintenance machines and vacuums.

The Lincoln Auto Scrubber, for completely automatic floor cleaning, does five jobs: spreads solution, scrubs, rinses, picks up, dries. Five models for all floor sizes.

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ESTABLISHED 1904

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What's New . . .

Literature and Services

- Modular ceiling lighting systems and pendant lighting units are described in a new **Condensed Catalog** available from The Wakefield Company, Vermilion, Ohio. Illustrations of typical installations accompany the technical data.

For more details circle #880 on mailing card.

- "Take Care of Your Tableware!" is the title of a new folder issued by Oneida Ltd. Silversmiths, Oneida, N.Y. It describes in five easy steps the correct method for washing, rinsing, handling, burnishing and storage of silverplated flatware.

For more details circle #881 on mailing card.

- "New Horizons With Microfilm" is the title of a new brochure issued by Filmsort Div., Dexter Folder Co., 50 S. Pearl St., Pearl River, N.Y. It describes the Filmsort system of microfilming, details new equipment, supplies and techniques for handling records, and provides case history reports on applications, savings and other benefits.

For more details circle #882 on mailing card.

- Niagra Air Conditioners for institutional application are the subject of **Bulletin No. 133** issued by Niagra Blower Co., 405 Lexington Ave., New York 17. The coil surface type units are offered in capacities from 41,500 to 1,680,000 BTU per hour.

For more details circle #883 on mailing card.

- A new chart on "How to Select a Fire Extinguisher" is now available from the Fire Equipment Mfrs. Assn., Inc., Suite 759, One Gateway Center, Pittsburgh 22, Pa. The chart lists basic types of extinguishers and shows at a glance which to use against three cases of fire.

For more details circle #884 on mailing card.

- A new "Infinity Fabric" Brochure has been released by Edwin Raphael Co., Inc., Holland, Mich. **Brochure No. 505** describes drapery and upholstery fabrics and illustrates 45 Infinity Print Designs. A color chart showing 24 colors accompanies the brochure.

For more details circle #885 on mailing card.

- "A Chalkboard Manual" has been prepared by Pennsylvania Slate Producers Guild, Inc., 205 Realty Bldg., Pen Argyl, Pa. to provide various aspects to consider when selecting a chalkboard to fill individual requirements. The manual discusses selection, specifications, installation, uses and maintenance points to consider.

For more details circle #886 on mailing card.

- How to get maximum efficiency, performance and service from AMF Lowerator Self-Leveling Dispensers is discussed in a new "Operations Manual" issued by American Machine & Foundry Co., 261 Madison Ave., New York 16. The booklet is divided into Operation, Maintenance, Heating, Adjustment and Cleaning sections.

For more details circle #887 on mailing card.

(Continued on page 92)



"BUBBLE-STREAM" PUSHES COSTS DOWN!



SINGLE INTERNAL
PART PREVENTS
CLOGGING.
IT'S PATENTED!

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IN ALL FIELDS OF MASS-FEEDING



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Sanitary Vacuum Insulation —
A positive Health Safeguard!

To-day's "Modern" trend toward centralization of food preparation is a milestone toward Economy, Better Quality and Higher Sanitary Standards.

Into this new picture nothing fits like Aerovoid's Portable, Stainless-Steel, High-Vacuum Insulated, food, soup and liquid Carrier-Dispensers. Aerovoids alone provide the proven quality and durability to survive under rough usage, spreading their cost over a long period of uninterrupted service. All Aerovoid Equipment, so indicated in our specifications is "In Compliance" with the sanitary construction requirements of the U. S. Public Health Service Ordinances and Codes.

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Coffee and Beverage Carrier-Dispensers



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for simplicity,
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and strength

127 years
makers of
chairs and
tables for
public use.



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loose cushions.
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Write us about your seating
needs. We will send
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MIAMI, STATESVILLE, N. C.

What's New . . .

- A new folder showing Lighting Fixtures, Lanterns and Lamp Standards designed and fabricated by Meierjohan-Wengler, 1102 W. Ninth St., Cincinnati 3, Ohio is now available. The folder illustrates recent contemporary and traditional designs for institutional use.

For more details circle #888 on mailing card.

- Detailed planning diagrams and dimensional data on installations of Fiat toilet compartments in schools and other institutions are included in a new 16-page catalog. **Fiat Compartments Featuring Life-Line Hardware** are the subject of the catalog, stressing their use for toilet room, dressing room and hospital installation. Included in Catalog No. 570, available from Fiat Metal Mfg. Co., 9301 W. Belmont Ave., Franklin Park, Ill., is full information on Fiat Junior compartments, entrance and urinal screens, shower dressing stalls and cubicles.

For more details circle #889 on mailing card.

- The new **Benjamin General Catalog No. 28** describes the complete line of lighting equipment for institutions manufactured by Benjamin Electric Mfg. Co., Des Plaines, Ill. Complete information on equipment, tables for unit selection and illumination data are contained in the book which is arranged in ten sections labeled with index tabs for easy reference.

For more details circle #890 on mailing card.

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Wool fibers need Tinolan Process

STOP DESTRUCTIVE USE OF
Scrubbing—Soaps—Detergents

Tinolan process does not mat the pile but restores rugs and carpets previously mistreated.

COSTS LESS than scrubbing . . . is easier . . . without removing carpets or rugs . . . no expensive heavy equipment . . . no hard labor.

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Tinolan Process is now used in many leading Colleges and Universities. Write for full information.

TINOLAN

The Tinolan Company of America, Inc., Wallingford Rd., Media, Pa.

- The line of **Soap Dispensers** manufactured by Bobrick Dispensers, Inc., 1214 Nostrand Ave., Brooklyn 25, N. Y. is described in the 1957 Catalog issued by that company. Details and illustrations on liquid, powdered and lather dispensers, liquid and lather soap valves, tank-type soap systems and hand lotion dispensers are included.

For more details circle #891 on mailing card.

- A **Feature Comparison Chart** for food warming equipment is being offered by Duke Mfg. Co., 2305 N. Broadway, St. Louis 8, Mo. Equipment features and advantages are listed for easy reference when comparing various brands.

For more details circle #892 on mailing card.

- Corning Troffer Curved Alba-Lite panels are the subject of a new lighting data bulletin issued by Corning Glass Works, Corning, N.Y. Bulletin L-110-D contains full product data, photometric data for 2, 3 and 4 lamp troffers and formulas for illumination level calculations.

For more details circle #893 on mailing card.

Suppliers' News

East-West TV Network, 2924 Auburn Ave., Toledo 6, Ohio, manufacturer of equipment and facilities for closed-circuit television and large screen projection equipment, announces the purchase of the assets, manufacturing equipment and designs held by **The Fleetwood Corporation of Florida**.

For more details circle #894 on mailing card.

- **Garden City Plating & Mfg. Co.**, 1750 N. Ashland Ave., Chicago 22, manufacturer of institutional and commercial lighting fixtures, store fixtures and display and cabinet hardware, announces the purchase of a modern one-story plant at 2501 N. Elston Ave., Chicago, to house its Garry Lighting Division.

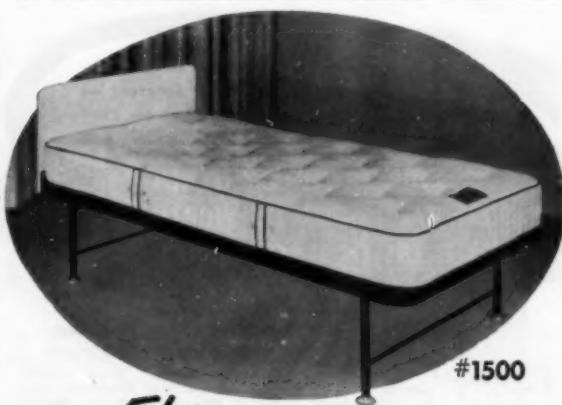
For more details circle #895 on mailing card.

McGraw-Edison Company, with headquarters in Elgin, Ill., manufacturer of Toastmaster and other food service equipment as well as electrical instruments, batteries, dictating machines and medical gases, announces acquisition of the assets and business of **The Griswold Mfg. Co., Erie, Pa.**, manufacturer of electrical heavy-duty institutional-type cooking equipment. With this acquisition McGraw-Edison now produces a complete line of institutional cooking equipment.

For more details circle #896 on mailing card.

- **Lily-Tulip Cup Corporation**, 122 E. 42nd St., New York 17, manufacturer of paper food service, announces that, through a newly organized and wholly-owned subsidiary, **Old Town Pulp Products, Inc.**, it has acquired the business and plant of **The Old Town Company, Old Town, Maine**. The new subsidiary will continue its manufacture of smooth surfaced compartment plates and related items which will complement the present Lily lines of paper cups and paper containers.

For more details circle #897 on mailing card.



USE Flexo BEDS for Comfort and Economy

- Flat coil spring of Swedish steel; cadmium plated for corrosion and rust resistance. Unexcelled for comfort—gives uniform support to entire mattress area.
- Head end available in choice of decorator's colors, solid colors, carnival patterns, and woodgrained formica finishes. Edge of head board is protected with plastic.
- "L" frame holds mattress securely in position. Legs are sturdy steel tubes having large 2 1/2" glides.

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June, 1957

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Typical classroom, N. Charleston (S.C.) High School,
lighted with Day-Brite Luvex® fixtures in a "U" pattern.

71132

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